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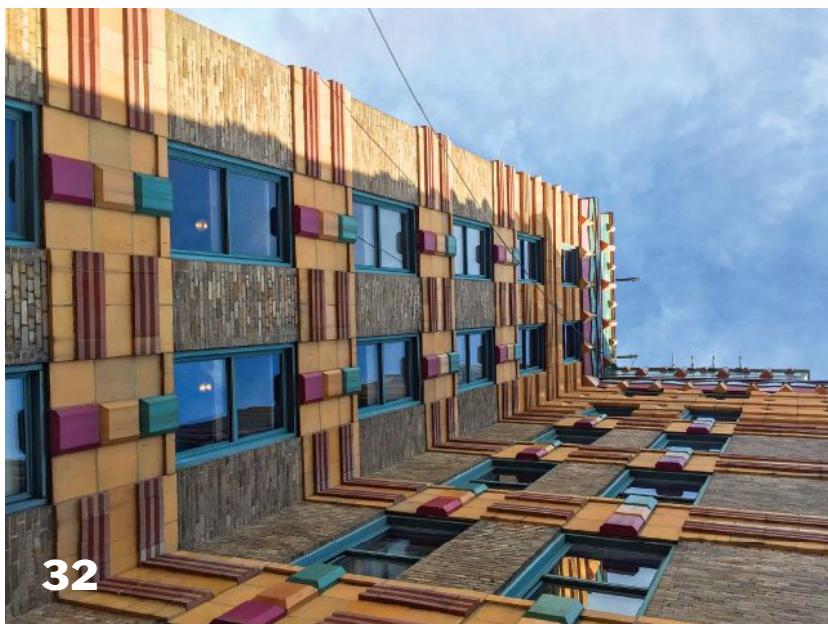
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Historic tax credits contributed to the restoration of the LeVeque Tower in Cincinnati by Schooley Caldwell Associates. Photo: Lauren K Davis/feinknopf photography. See page 12.



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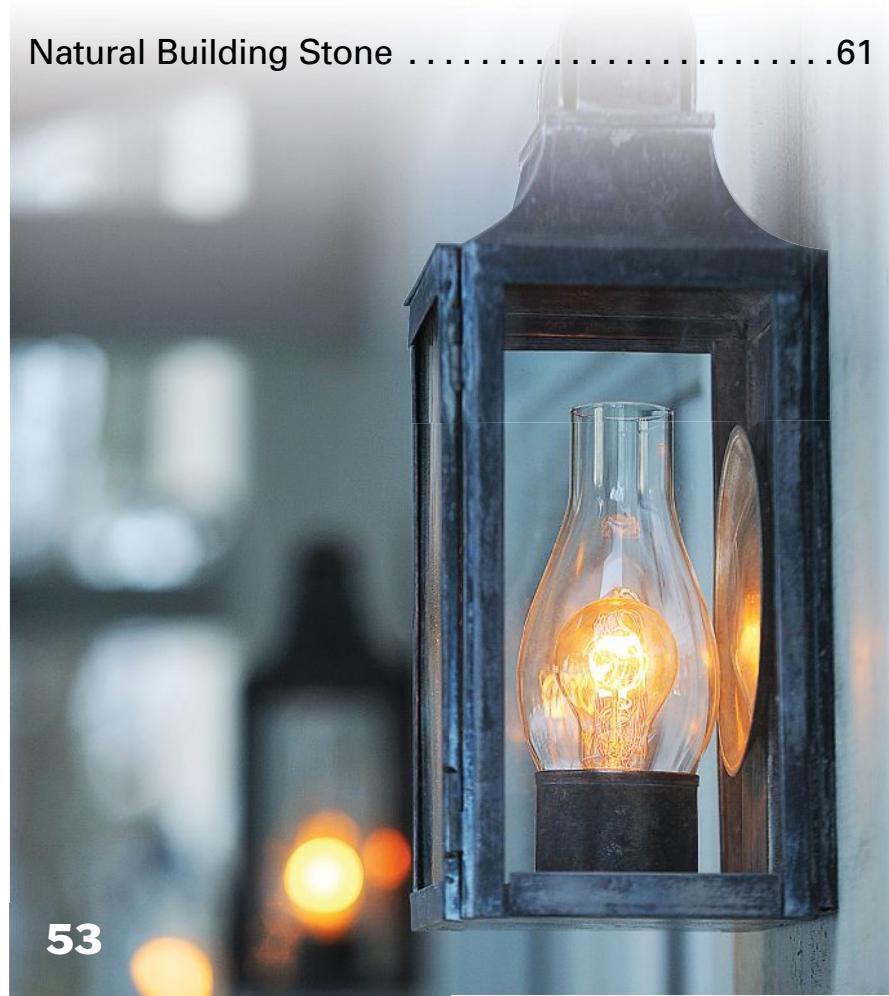
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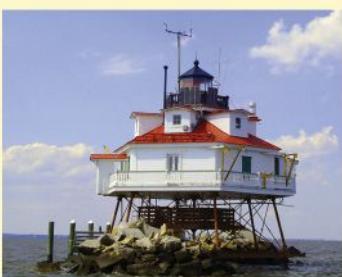
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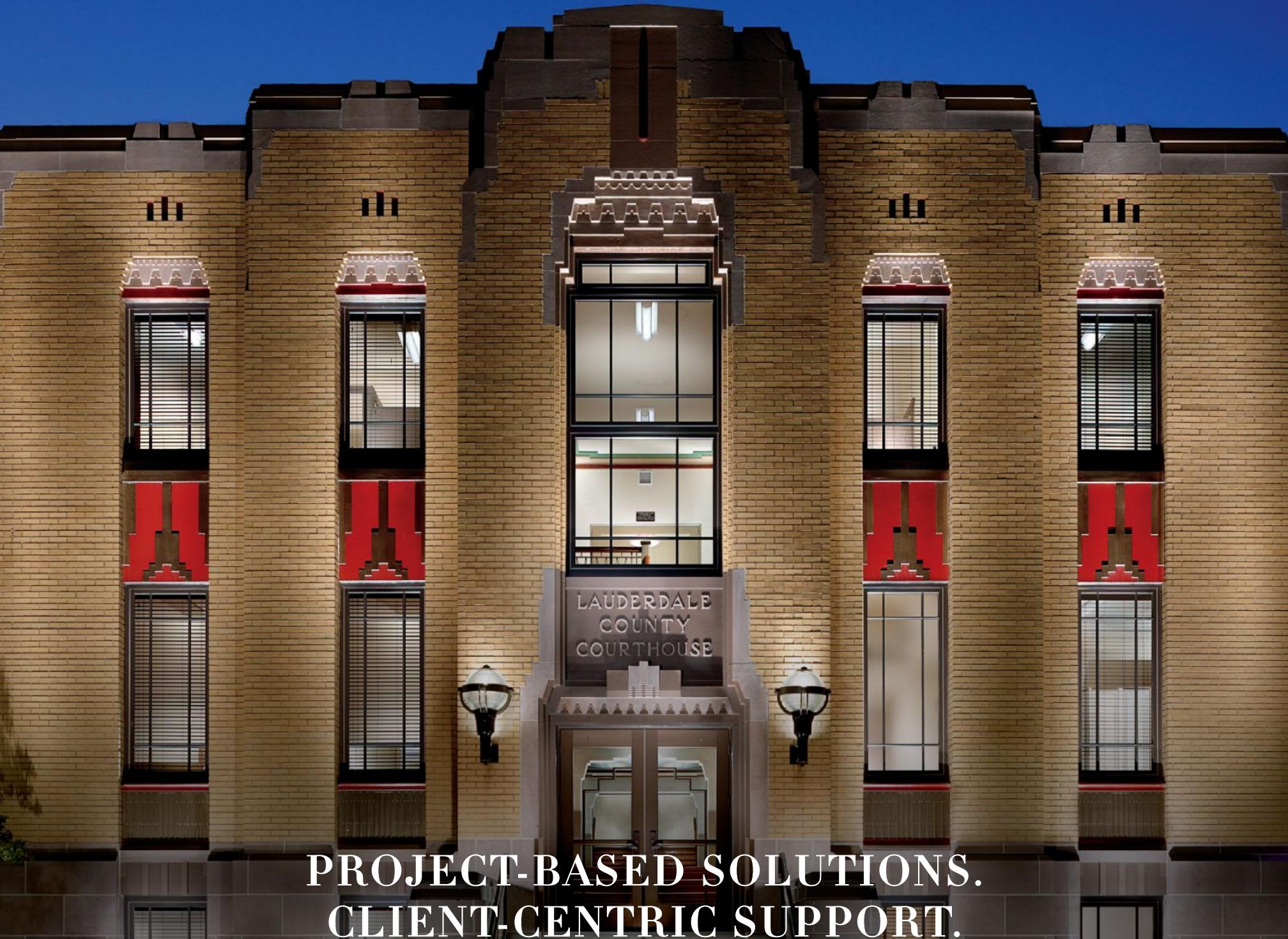
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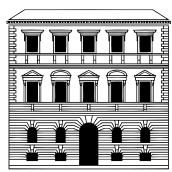


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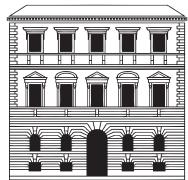
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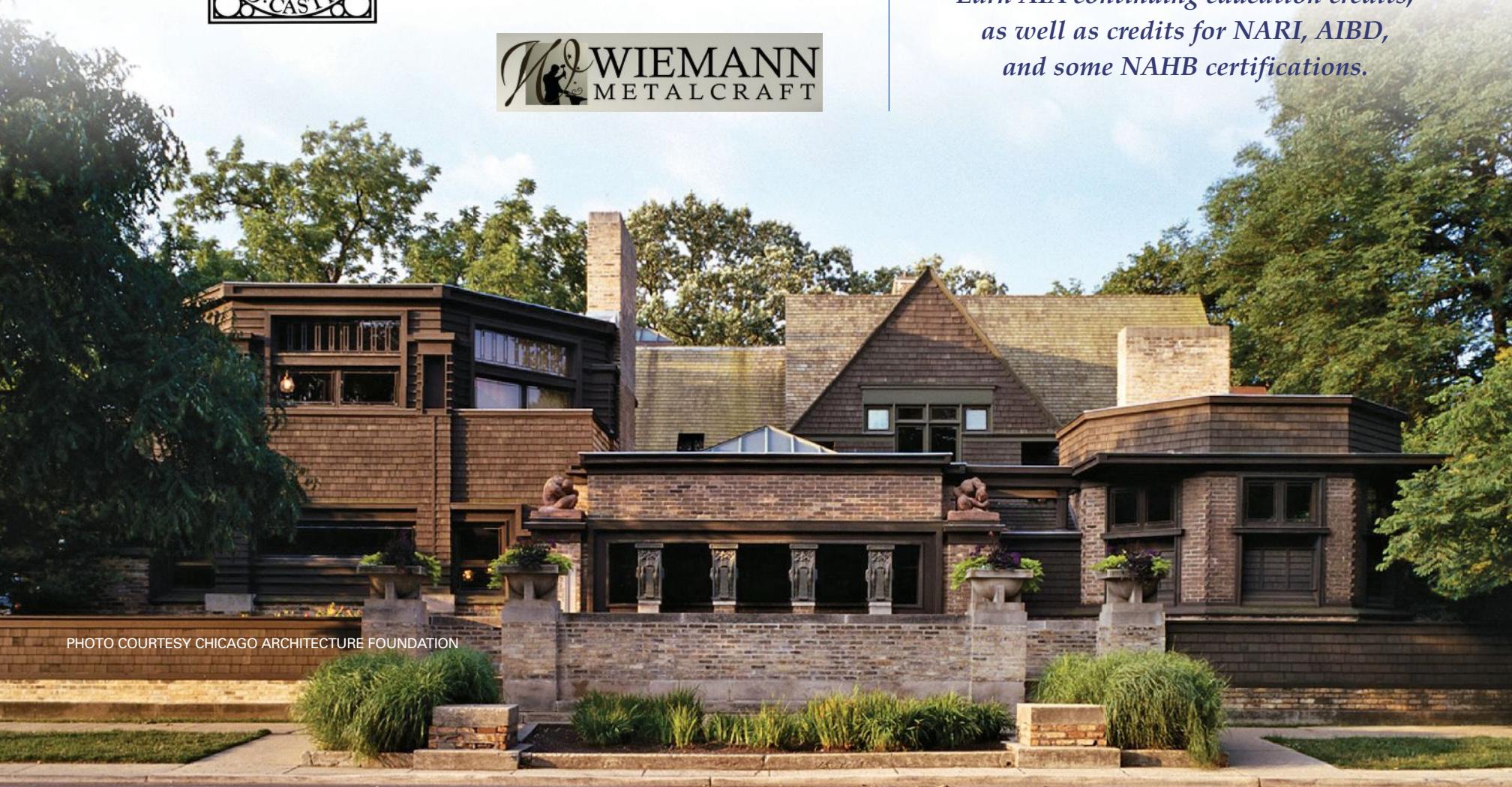
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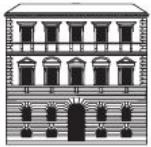


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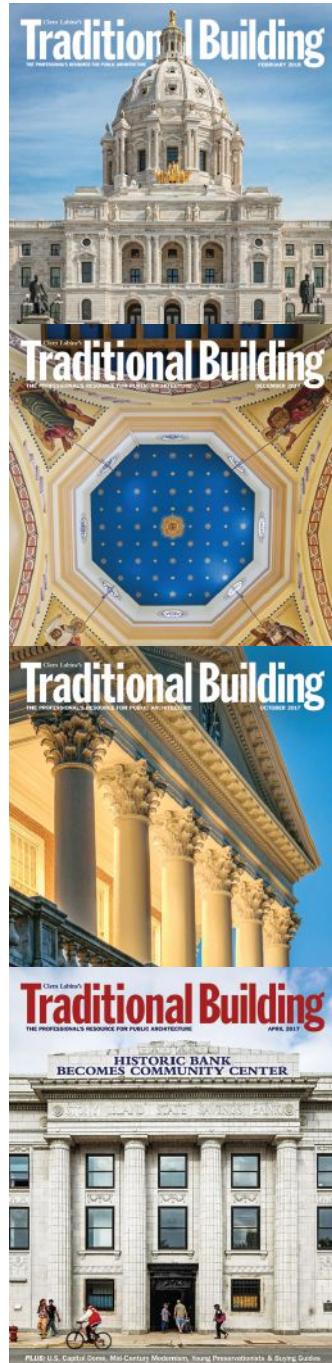


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Historic Tax Credit, Take Two

Almost felled by the tax reform ax, an immensely effective preservation tool still stands—albeit under new forms and rules.

By Gordon H. Bock

NEARLY REDUCED TO HISTORY ITSELF, the federal Historic Rehabilitation Tax Credit program—the economic catalyst behind thousands of historic building transformations—eluded the congressional chopping block last fall 2017 as legislators rushed to pass the most sweeping tax overhaul in decades. Make no mistake, it was a cliffhanger up to the very end, and while the program has had its wings clipped, compared to what it could have become—which is a vastly reduced credit or none at all—historic building developers, owners, architects and planners are calling it a win and among the most successful political turnarounds for the preservation community to date. The question now is, what happens next?

To review, since it was launched in 1976, the Federal Historic Preservation Tax Incentives program has been a powerful driver of private sector investment in the rehabilitation and reuse of historic buildings, leveraging \$89.97 billion in private investment to preserve more than 43,000 historic properties and thereby revitalize communities and create jobs. Its centerpiece, the Historic Rehabilitation Tax Credit (HTC), launched in the 1980s under the Reagan administration, offers a tax credit—a dollar-for-dollar reduction in taxes owed—for 20% of qualifying rehabilitation costs on certified historic buildings 50 years and older.

While the basic HTC program lives on and still retains the 20% credit, as of December 31, 2017, it has been modified by, in brief, 1) extending to five

years the timing for how the credit is taken; and 2) eliminating a sister incentive, the 10% tax credit for rehabilitation of non-historic buildings.

As of this writing, the modified program is still very new, with lawyers and tax professionals studying and interpreting its language. Washington watchers even anticipate further tweaks to the reform bill in coming months. While the crystal ball for the full impact of the modified HTC remains murky, opinions on its immediate consequences, as well as some long-range possibilities, are becoming clearer.

“Uncertainty is result number one,” says Donovan Rypkema, Principal at PlaceEconomics, a heritage consulting firm in Washington, DC. “Whenever there’s uncertainty, people want to wait.” Carolyn Kiernat, AIA, Principal at Page & Turnbull in San Francisco, agrees. “There’s nothing that developers like more than certainty,” she explains. “Any time there are questions about process, or procedure, or value, then the more volatility there is that, I think, collectively can adversely impact a development project.” Adds Robert D. Loversidge Jr., FAIA, President/CEO at Schooley Caldwell Architects in Columbus, OH, “Like any change in the regulations, everybody gets nervous. So, there’s an adjustment period while the program turns into whatever it will be. The good news is, it wasn’t eliminated.”

The second evident effect is the deferral of the receipts of the tax credit. “It used to be that if I do a project and spend \$1 million on qualifying rehabilitation expenditures (QREs),” summarizes Rypkema, “the day I put the project into service, I get a 20%—





The Transition Situation

Projects already in the works may be “grandfathered” in under the old HTC rules if, in a nutshell, they meet two requirements:

- 1:** The taxpayer has to have owned or leased the property in question by December 31, 2017 and then continuously own or lease it thereafter;
- 2:** The project has to be placed in service—that is substantially completed—by either 2020 or 2023 (dates determined by eligibility to use either the 24-month or 60-month measuring period under the Substantial Rehabilitation Test).

Tax experts are still interpreting how these rules apply to specific projects, especially regarding terms such as “owned,” “leased,” and “continuously owned.”

LeVeque Tower, Cincinnati. A 1927 early skyscraper clad in Byzantine-style Art Deco terra-cotta, the 47-story LeVeque Tower was once the fifth tallest building in the world.
Photo: ©Lauren K Davis / feinknopf photography



or \$200,000—tax credit. There's still going to be a \$200,000 tax credit, but now I only get 4% a year for five years, which makes a substantial difference." What the fallout is from that difference depends upon whom you ask. "Everybody's putting their pencil to the equation," says Rypkema, "but I suspect that the deferral could diminish the value of the tax credit in the neighborhood of 30%. So whatever the credit was worth last year, it's going to be worth maybe a third less from here on out."

Worth is the key here because, surprising as it may be to the man on the street, HTCs, once earned, are often bought and sold—and not for their original dollar value. Using the \$1million project example that yields a \$200,000 tax credit, Rypkema explains that if he doesn't have \$200,000 worth of tax liability, he has to stretch out the timing until he can use the credit up. "That old cliché that time is money really is true. The longer I have to wait to get paid, the less valuable that payment becomes."

This is what has led to sharing out of tax credits in some form of syndication. "Some entity—Bank of America, for example—buys the tax credits giving me, say, 90 cents or 93 cents on the dollar for the credit because they have a high enough tax liability that they can use it all the minute they get it," says Rypkema.

Charles A. Rhuda III, CPA, partner at Novogradac & Company LLP in Boston, a firm that specializes in historic tax credit developments, points out that because historic transactions come in all sizes, there's no one type of buyer. "Some banks do participate in the program, but also some large consumer products companies, such as The Sherwin-Williams Company, are also very large buyers of historic credit, and a couple other corporate investors that are not financial institutions are fairly active in the market." Sometimes small- and medium-sized deals involve individuals who have some specific tax liability situation, "and then there are regional buyers, such as a regional grocery store chain that purchases federal and state credits."

Selling credits has value too for the developer or building owner. Kiernat cites the Exploratorium at Pier 15 in San Francisco, an adaptive reuse of a historic pier where Page & Turnbull guided the preservation, tax credits, and local entitlements for a science-based interactive museum. "This was a \$220-million project where they received \$36.6 million back in tax credits. These credits can be brought in early on through investors who are buying the tax credits. That's money that the Exploratorium was able put into programming, exhibit building, and hiring teachers, and an example of a non-profit organization that's able to benefit from the credit in a big way."

Kiernat acknowledges that the Exploratorium also spent a lot on sitework and exhibits—work that doesn't qualify for credits. "But many developers here look at the credit as one arm of the overall financing structure of the project. I believe that there are some projects that wouldn't go forward, or would go forward in a much different way, if they didn't have the credit."

Loversidge agrees. "These incentives are not a windfall for somebody; they're really a make-it-work kind of thing that seems to affect all these projects." He is reminded of the current adaptive reuse of a former bank building in downtown Cincinnati. "These are difficult projects—they have no flexibility, mostly vacant—and the credits make these things possible."

Most people agree that had the HTC been modified down to 10%—actually the case in later versions of the tax bill—it would have been rendered nearly useless, but at 20% with a five-year payout, what is the possible outcome of its new diminished dollar value? Again, it depends upon whom you talk to—and where and what size they are.

As Rhuda explains, “If you’re investing a dollar today, but you’re receiving tax savings over five years, there’s a yield adjustment that goes along with that.” In the past, he says, the time between the substantial equity contribution and the allocation of the credits was fairly close. “But now if the investor is going to have to invest today and be allocated credits over five years, the pricing might be more similar to the Long-Term Low-Income Housing Tax Credit, which is received over 10 years, so people will adjust the pricing accordingly.”

Some argue that large developers deal with changing percentages, such as interest rates and construction costs, all the time, and a diminished HTC is only one part of a complex financial puzzle. Moreover, any diminishment is merely a fraction of a fraction because the HTC itself is just a 20% credit of only qualifying rehabilitation expenditures—not the expense of property acquisition, sitework, new additions, and so on.

Not all would concur, however. “What we’ve seen is that the building is the most important part of the whole project,” says Kiernat. She explains that in California and other western states, seismic concerns mean that a large percentage of the construction budget is often invested in structural work, “tens of millions of dollars just in reinforcing the structure itself, so it is helpful to have the 20% credit to offset these costs.”

A Mixed New Normal?

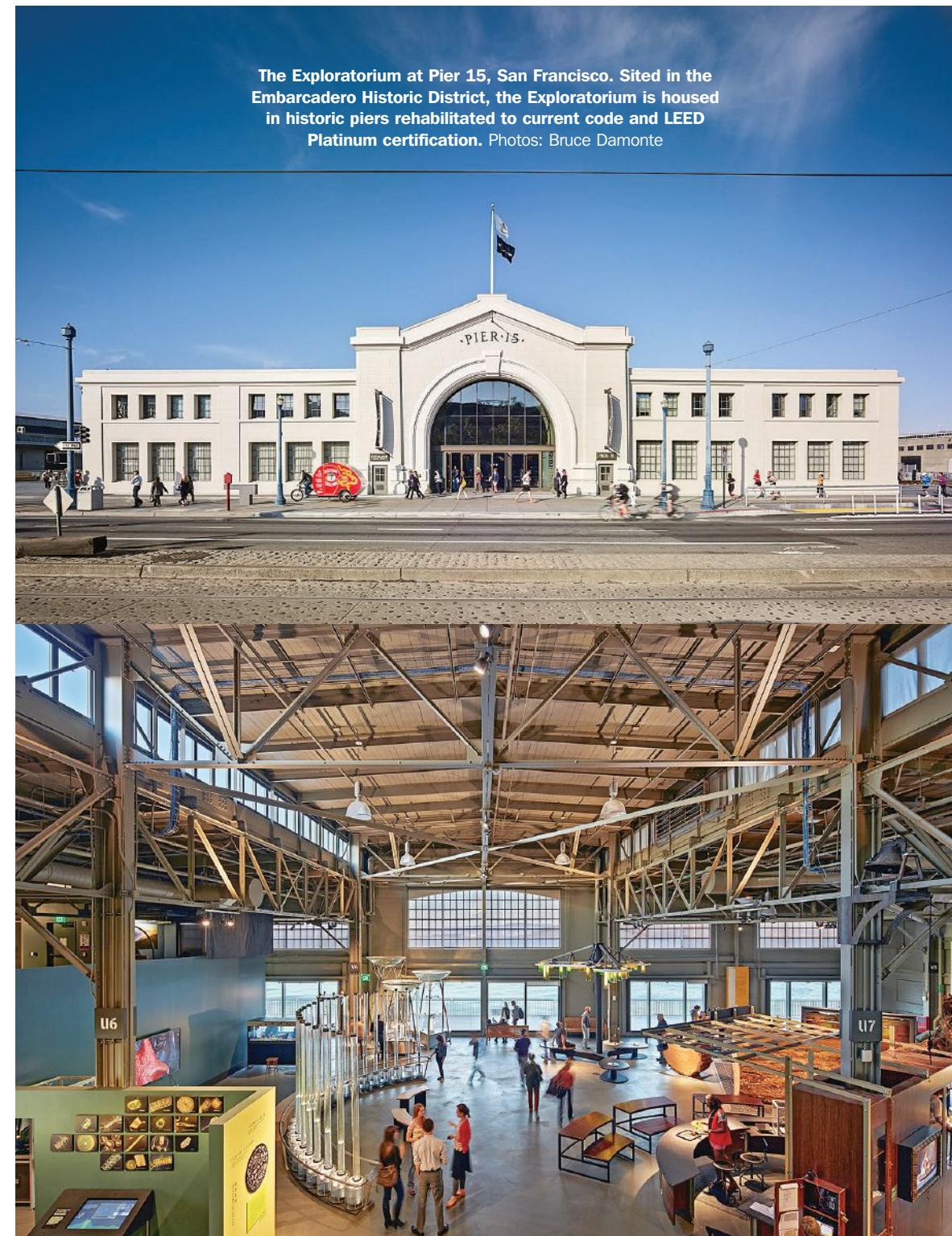
As luck would have it, even the most ballyhooed and non-historical part of the federal tax overhaul looks to give HTCs the proverbial haircut. “The federal tax rate going down from 35% to 21% has a direct impact on the value of HTCs,” says Rhuda, “because for each dollar invested, the investor is not saving 35 cents anymore, they’re only saving 21 cents. So, on a yield-adjusted basis, there’s an automatic reduction in the value of the credit just for the fact that a dollar of credit buys less tax savings than it did last year.”

Kiernat adds, “In addition to the lower corporate tax rate, there are changes in how depreciation of the asset is calculated, and there are limits to the amount of mortgage interest that can be deducted, so there still seems to be a lot of speculation about this.”

So, assuming the modified HTC does influence historic rehabilitation projects, will it affect some more than others? “I think it will,” opines Rypkema, “The big-league developers will figure out a way to put a deal together and make it happen—or walk away.” As he explains, “If I’m a big developer, I’ve hired accountants and tax syndicators and architects who’ve done tax credit projects before, so I can live with those kinds of time and capital costs. Plus, when I’m done with this project, I’ll do one next year—and I did one last year—so there’s much less of a learning curve.” The opposite scenario, he speculates, is the mom-and-pop hardware store on Main Street considering a \$400,000 tax-act rehabilitation. They’ll get back \$80,000 in federal credits and \$20,000 in state credits, but conceivably, this will be the only project they ever do, so the learning curve is really steep. “With all the paperwork, money, and hassle,

Why Five Years?

In a welcome bit of parliamentary Ju-Jitsu, last fall Senator Bill Cassidy (R-LA) and other Finance Committee Senators reversed the dimming fate of the federal HTC by changing not only the percentage but the terms. While the “Cassidy Amendment” restored the HTC to 20%, it also provided that it be taken over five years—a timeline that pushed some of the payments out of the 10-year budget window that every bill works on, thus becoming a cost-saving measure versus the federal budget.



those kinds of projects, particularly in states with no tax credit, might really take a hit.”

After talking to smaller developers, Kiernat has a different perspective. “If they don’t have enough taxable income to use the credit in a year, they tend to like the option of spreading it out over five years.” As she explains, these might be developers under \$5 million—perhaps individuals—who are not selling

the credit and do not have other investors coming in. “My hunch is our smaller developers are moving forward anyway. They’re often taking the credit themselves, so this change to a five-year payout doesn’t impact them as much.” This contrasts with larger projects with larger overall dollar amounts that need to have investors use the credit immediately. “They’re the ones who may pull out.”

There's also the question of states with tax credit programs versus those that don't. "In Ohio, it's really the combination of federal and state credits that is such a great thing for projects all over the state," says Loversidge. He points to the Leveque Tower in Columbus, an early, 47-story, terra-cotta clad skyscraper completed in 1927. "The expense in dealing with that 90-year-old terra-cotta skin is incredible." Plus, he says it's a narrow little tower where they had to add an extra stairway due to code requirements. "Anything that happens at the federal level could have a ripple effect at the state level, and that would be really bad."

Turns out, in many cases the impact on state programs is well beyond speculation. Renee Kuhlman, Director of Policy Outreach at the National Trust for Historic Preservation, says that the Trust is urging every one of the 35 states with HTC incentives to look at their statutes. "States need to see if either their timing is linked to the federal program, or if there are ways to increase the effectiveness of their state credits to make up for the diminishment of the federal HTC."

She notes, for example, that in Wisconsin, the department of revenue was surprised to find that their statutes tie the timing of the state tax credit to the timing of the federal credit and will now have to be taken over a five-year period. "By my counting, there are about three states that work this way." This coupling has its origins in the way many state tax credits build upon the federal program. "A lot of them are written so that if you get the federal credit, then you automatically qualify for the state credit."

Says Kiernat, "States like California are at a disadvantage because we don't have a state credit to couple with the federal credit." Nonetheless, there's a lot of support in California for a state tax credit. "In fact, in 2014 the state legislature passed a bill to create a state tax credit." Ultimately the bill did not make it past the Governor's desk, she says, but coming that far demonstrated the support that it had throughout the state.

There's already evidence of states looking to take up the slack left by the modified federal credit. "In Wisconsin, for example, the recent legislative session just increased the amount of its per-project cap from \$500 thousand to \$3.5 million," says Kuhlman, "so that's going to do great things." West Virginia raised its HTC from 10% to 25% in October, and in New York there is a movement now to de-couple their program from the federal structure as well as extend it to December 2024.

Of course, the opposite may also be afoot. Says Kuhlman, "I do think that states are also going to see a lot of push from state Republican legislators to take a page out of the federal credit playbook and say, 'You know, we need to simplify our tax code.'"

As ever, change remains the only constant. "There's some ten months left in the 115th congress," says Kuhlman, "so if they do start making technical corrections to the tax code, there may be a possibility to look at incorporating provisions in the HTC Improvement Act. Because Congress retained the program, but they didn't improve it—and there's 'always room for improvement.'"

Gordon Bock is an architectural historian, instructor with the National Preservation Institute (www.npi.org), and in-demand speaker through www.gordonbock.com.

Carson Block Building, Eureka, CA. Rehabilitated by Page & Turnbull, the 50,000-sq.ft., 19th-century building required a seismic retrofit. It is built mostly of redwood with terra-cotta panels. Photo: Schafphoto





For More Information

National Trust for Historic Preservation

www.savingplaces.com

Historic Preservation advocacy

Novogradac & Company LLP

www.novoco.com

Accountants and consultants with specialization in
and reports on historic tax credit developments

National Park Service

www.NPS.gov/tps/tax-incentives.htm

Info on the federal tax incentives program

Historic Tax Credit Coalition

www.historiccredit.com

Historic Tax Credit advocacy

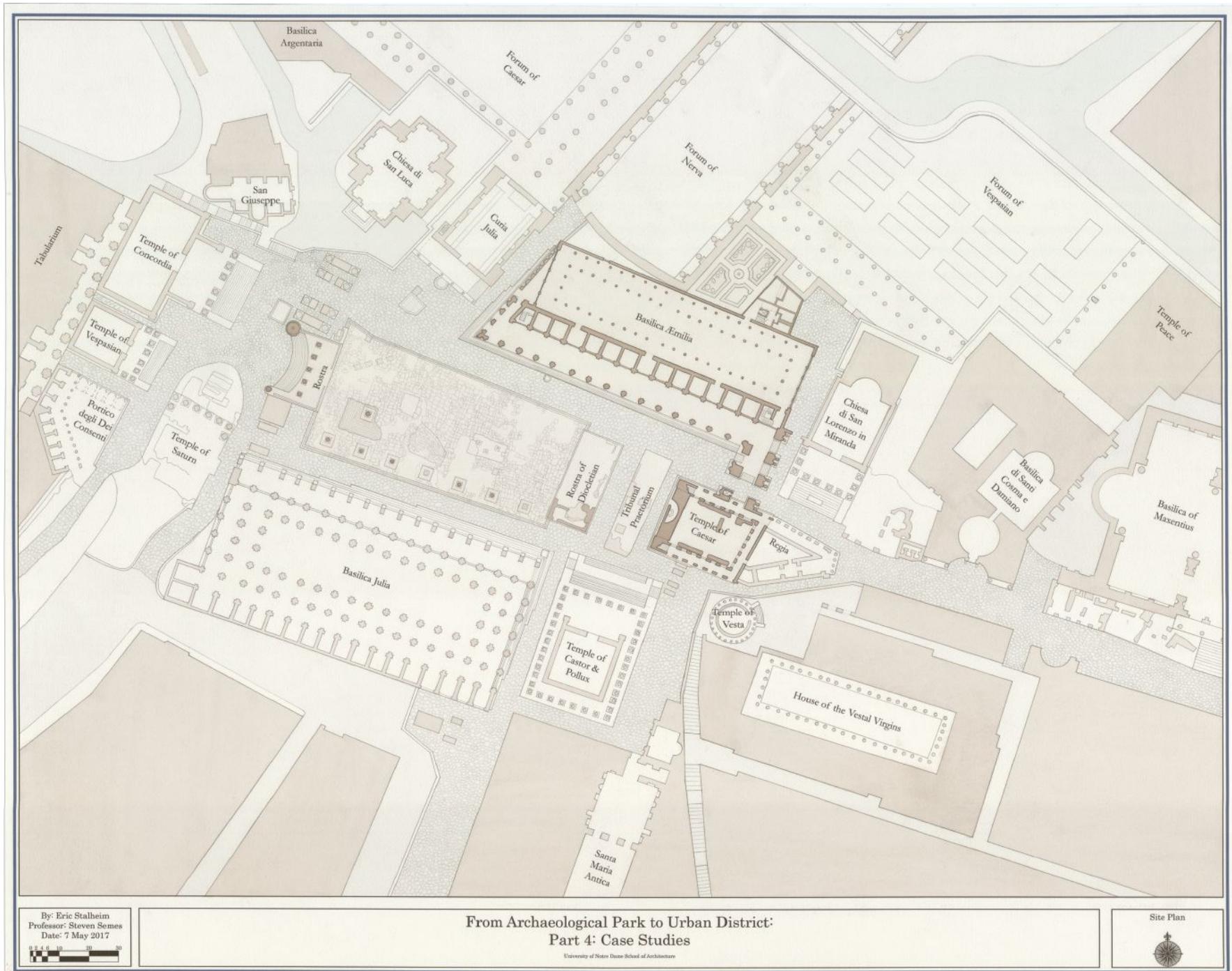


AN INTERNATIONAL PERSPECTIVE: *Teaching Historic Preservation at Notre Dame*

By Steven W. Semes

ABOVE: Historic preservation students participating in the DHARMA program directed by Professor Krupali Krusche documenting the ancient Temple of Saturn at the Forum in Rome. Students learn techniques like laser scanning and GigaPan photography, but also measure and draw by hand to develop the broadest range of skills necessary to document historic sites in the field. Photo: courtesy of University of Notre Dame School of Architecture

OPPOSITE: Eric Stalheim's Master's Thesis brought him back to Rome to prepare a conservation and development plan for the Roman Forum that seeks to re-connect the archeological area with the rest of the city. He proposed re-establishing the ancient street network and suggested preservation treatments for the principal buildings, then focused on two case studies: a graphic reconstruction of the Basilica Aemilia and a replacement structure for the Temple of the Divine Caesar, showing two different treatments based on our knowledge of the original configurations. Photo: courtesy of Eric Stalheim



THE SCHOOL OF ARCHITECTURE at the University of Notre Dame began implementing a curriculum based on classical architecture and traditional urbanism in 1989, and for the more than a quarter-century since then, it has had a measurable impact on the profession. Directly and indirectly, the School has contributed to a more open and pluralistic culture, both among practitioners and academics, and has forged links with like-minded sympathizers internationally. The teaching and research of the faculty, the professional work of alumni, and public programs like the Richard H. Driehaus Prize and Henry Hope Reed Award, have opened up room for debate that simply did not exist in years past.

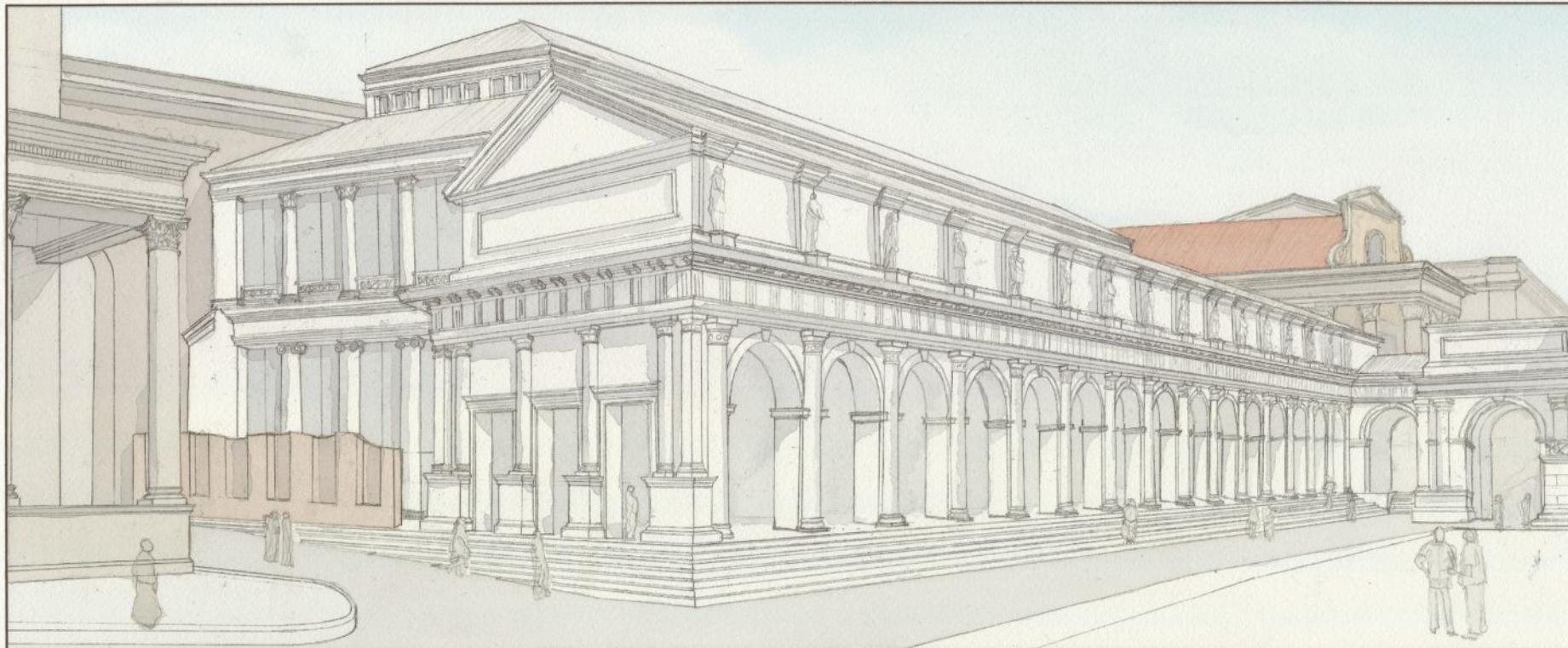
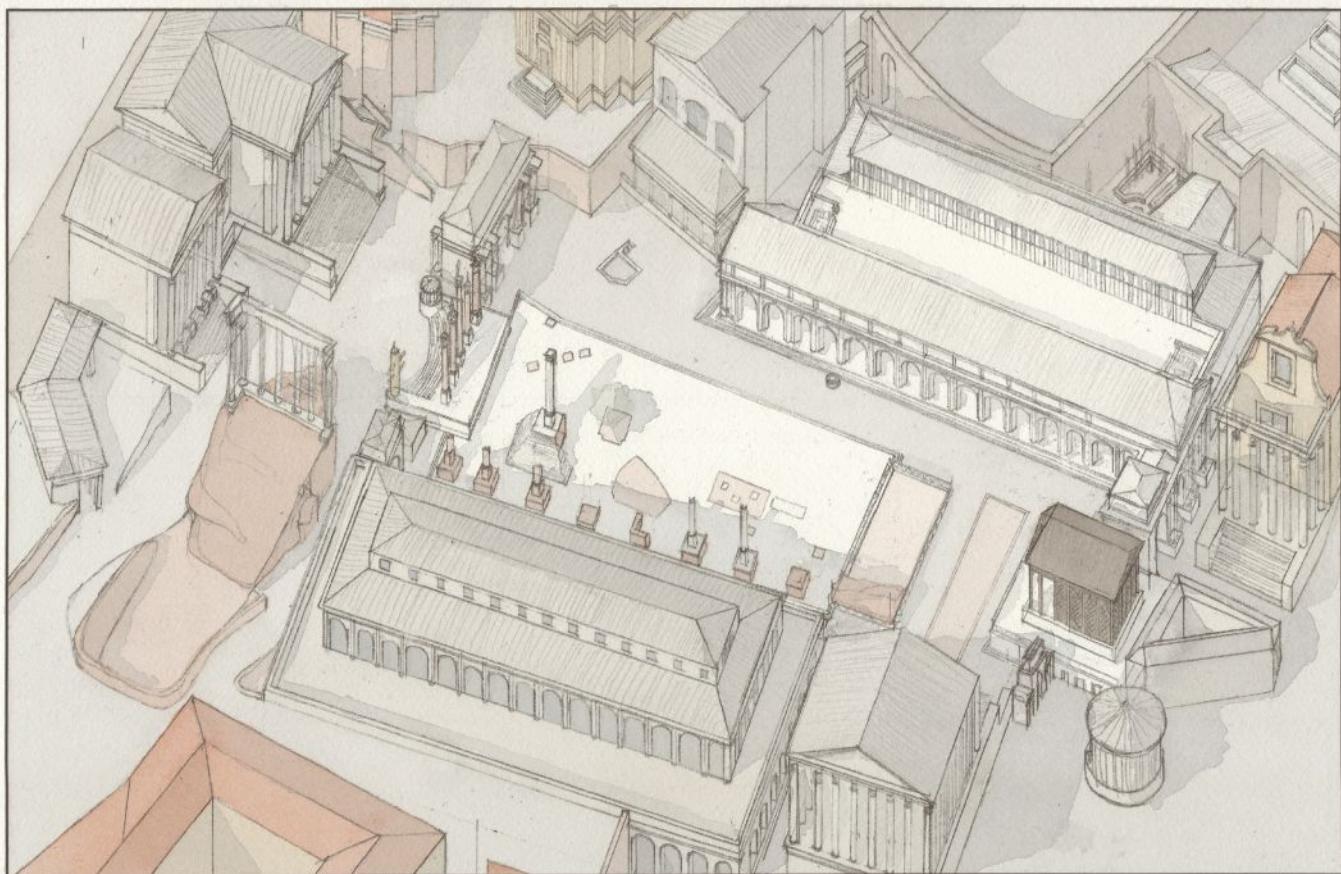
The ripple effect of the School's influence extends beyond new traditional architecture and New Urbanism to include historic preservation and a soon-to-come graduate program uniting the schools of Business, Law and Architecture to promote sustainable real estate development. Preservation has been an optional undergraduate concentration since 2007, and last year the School conferred its first Master of Science in Historic Preservation (MSHP) degree.

With nearly 40 US universities offering graduate degrees in historic preservation, Notre Dame's MSHP program distinguishes itself from its peers in two primary ways: its curriculum grounded in traditional architecture and urbanism, and its international perspective.

Teaching preservation at Notre Dame is a natural extension of its curriculum because learning how to design new traditional environments is relevant to the care of existing historic buildings, districts, and landscapes. While all of us have grown up in the age of Modern Architecture, few preservation professionals are experts on the design of pre-Modern buildings. As I wrote in an earlier article ("What's an Architrave? Announcing the New Graduate Program in Historic Preservation," *Traditional Building*, October 2014), preservation students are not typically trained in the historical formal languages that characterize the bulk of what they will be asked to preserve. Learning about historical styles and building cultures "from the inside" is essential to conserving historic places because success in the field requires knowledge of and respect for how those sites came to be, how they were made, and how their significance has evolved through time.

The best conservation practice requires the architect to identify, draw, analyze and restore the multitude of elements, both utilitarian and aesthetic, that make up our architectural heritage and, when called upon, to add to the heritage in ways that promote harmony and continuity of character rather than contrast and difference for its own sake.

Secondly, the Notre Dame program sees preservation efforts in the United States within the context of heritage conservation worldwide. Part of this arises naturally from the now 50-year-old Rome Studies Program that takes the School's undergraduates to the Eternal City for their entire third academic year and graduate students for one semester. Rome, in addition to being an essential resource for the study of classical art and design, is also a world center for heritage conservation. In addition to the hundreds of historic sites—from the grandeur of the Imperial Forums to more intimate sites like the Church of San Clemente, both just around the corner from Notre Dame's building—the city is also home to a vast public administration dedicated to the preservation of its historic sites, major university programs, training and research organizations like ICCROM and ICOM, the library and museums of the Vatican,

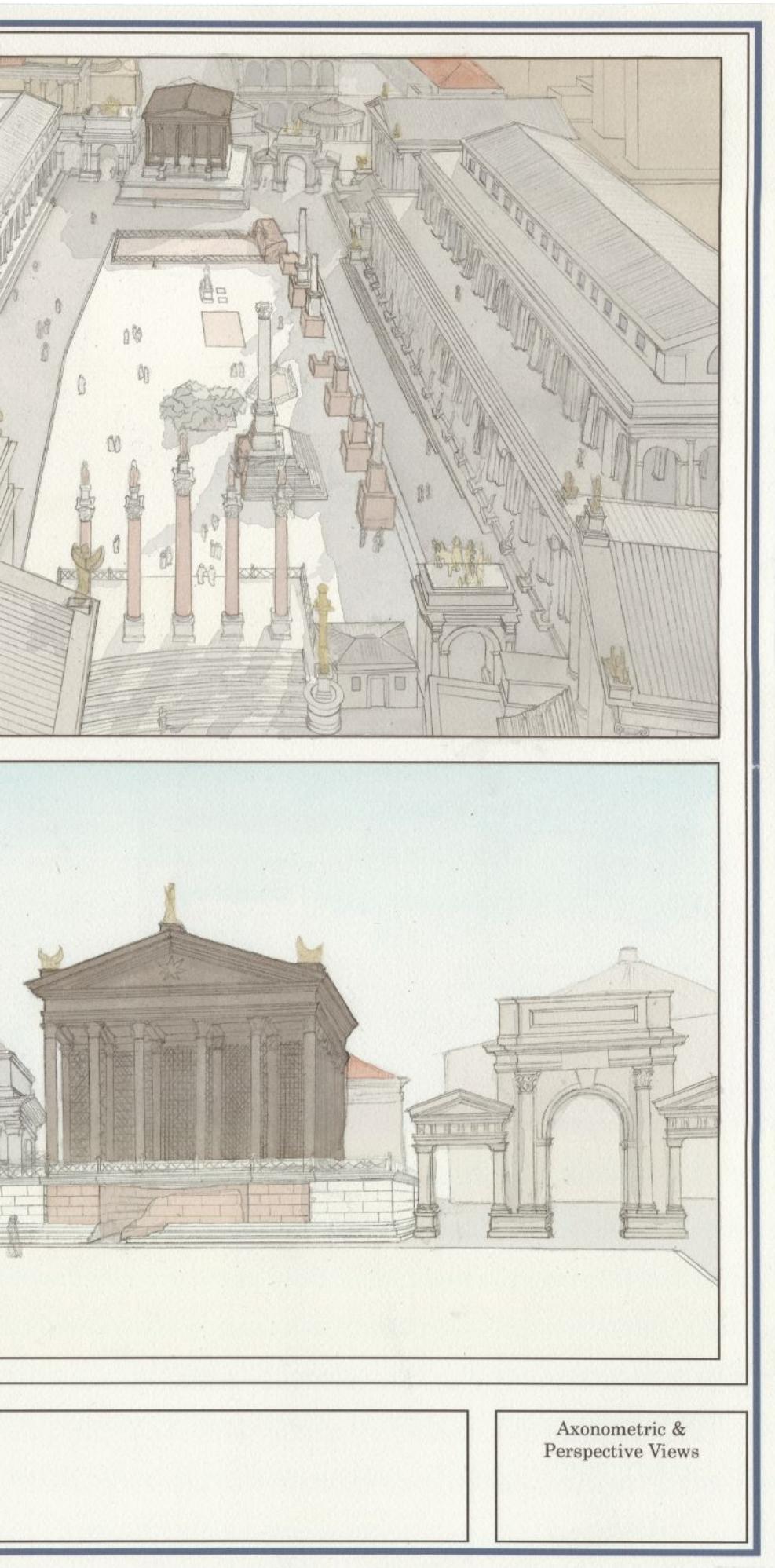


By: Eric Stalheim
 Professor: Steven Semes
 Date: 7 May 2017

From Archaeological Park to Urban District: Part 4: Case Studies

University of Notre Dame School of Architecture

Eric prepared a series of perspective views showing the proposed reconstruction of the Basilica Aemilia based on physical evidence and previous archeological investigations, and new construction at the site of the Temple occupying a similar volume and protecting the archeological remains, but built in different materials—in this case cast metal and glass—to house civic functions. These proposals addressed the question, “What do we know about the ancient structures and what treatment does that knowledge support?” They also engage questions about the degree to which ancient sites might once again be places of public life instead of isolated in “archeological parks.” Photo: courtesy of Eric Stalheim



and a host of independent professionals in preservation and restoration of all kinds. It is perhaps the world's most extensive conservation laboratory.

Notre Dame's Rome faculty actively uses the city as a classroom for teaching both design and conser-

vation. Visiting Professor Paolo Vitti, a Rome-based conservation architect and scholar with an international profile, teaches students to read the physical evidence of historic structures like the Castel Sant'Angelo to determine responsible conservation

treatments and interpret the history of the place to the public. "We study the history of construction and look critically at the use of modern materials and techniques, emphasizing not only conservation issues but also environmental sustainability," Vitti notes. He points out that Rome offers a unique vantage point: "Notre Dame's Rome Global Gateway offers the opportunity to study in one of the European countries that has actively questioned the modernistic approach to conservation. Since the 1980s in Italy, a new approach to scholarship and conservation practice has emerged concerning appropriate interventions at architectural heritage sites. A key part of this attitude involves a revival of the positivistic approach of the 19th century, which based conservation practice on a deep knowledge of traditional building techniques and materials. Generations of architects have now been trained in historic techniques so that conservation practice is more respectful of the fundamental need to preserve the integrity of our built heritage."

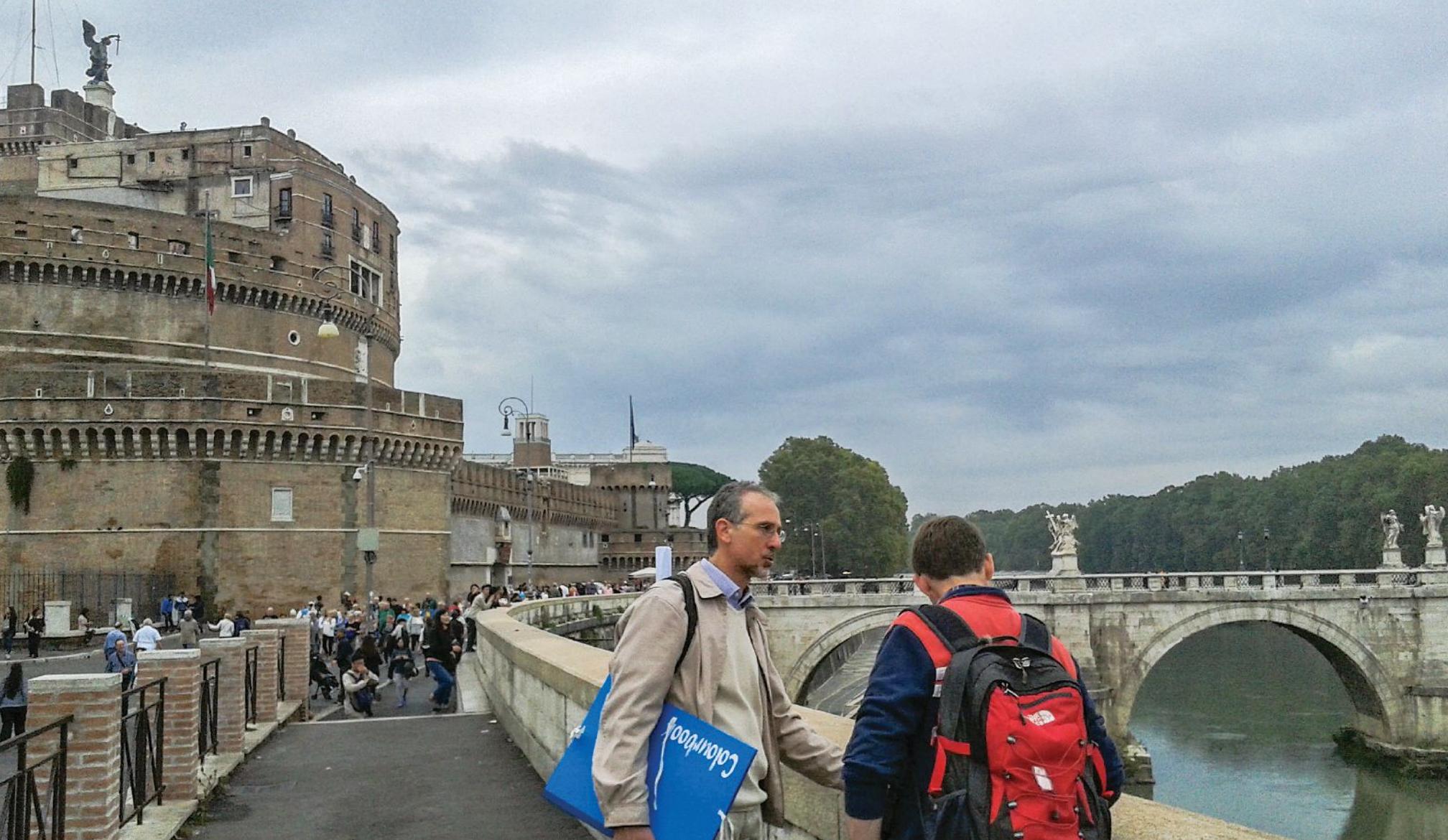
Another international experience open to students is Notre Dame's DHARMA program (the acronym standing for Digital Historical Architectural Research and Material Analysis), led by the current Academic Director of the Rome Studies Program, Professor Krupali Krusche, in which architecture and conservation students employ new technologies to record historic sites like the Roman Forum and the Belvedere Courtyard at the Vatican. Using high-definition laser scanners and GigaPan photography, the team has documented the existing state of these and other sites in unprecedented detail. Traditional methods of hand-measuring and photogrammetry are also used to supplement the data gathered by digital techniques. These documentary studies have led to new understanding of the original construction and subsequent changes that have shaped these sites through the centuries, better informing us about their future preservation.

The first graduate of the new MSHP program, Eric Stalheim, was particularly affected by his experience in Rome. An Iowa native, Eric began his Notre Dame studies in 2015 with the introductory design studio course Elements and Principles of Classical Architecture and the seminar History and Theory of Preservation, followed by a semester of Research and Documentation of Historic Sites and a studio in Urban Conservation, among other courses. He traveled to Rome in the fall of 2016, where he completed another design stu-

dio project to re-urbanize the area around Rome's famed Bocca della Verità. A course called International Conservation Laboratory began with a study of the international documents on conservation (such as the ICOMOS Charters) and then provided hands-on experience with professional architects and restorers working in Rome, including Paolo Vitti.

As part of this last course, Eric created "The International Documents on Heritage Conservation: A Guide to Their Evolution and Meaning," a poster-size table that arranges excerpts from a dozen of the most important international statements side-by-side and in chronological order, organized according to topics ranging from Authenticity to New Construction. The documents extend from the Athens Charter of 1931 to the Historic England Advisory Note on Reconstruction of 2016, and include the US Secretary of the Interior's Standards for the Treatment of Historic Properties of 1977. One can read across the table's rows to understand how any document addresses each topic or read up and down to compare how different documents address a single topic. Several prominent preservation leaders who have seen early drafts have found the matrix, as Eric calls it, a valuable resource for increasing the awareness of American preservationists about the international context in which we all work. Eric is now seeking publication of the complete matrix, a portion of which is previewed here.

The matrix allows a comparison of ICOMOS Charters and other documents to understand how preservation thinking has evolved over the last nine decades. It also reveals that some conventional ideas in the field have little basis in the official policy statements. For example, on the subject of new architecture in historic settings, the 2011 Valletta Principles call for "a continuity of composition that does not adversely affect the existing architecture but at the same time allows a discerning creativity that embraces the spirit of the place." The documents' increasing emphasis on intangible heritage and the use of traditional materials and techniques in restorations and infill construction makes it difficult to sustain the frequent insistence by preservation authorities on conspicuously different modern materials and forms intended to "differentiate" old and new or represent "the architecture of our time." Thorough reading of the international guidance shows a more subtle understanding of the relation between new and old architecture and supports Professor Vitti's emphasis on the use of traditional materials and methods.



In the spring semester 2017, Eric completed his Master's Thesis, an ambitious conservation plan for the Roman Forum that explored the relationship of the Archeological Area of Rome to the city around it. A closer examination of two ancient structures as case studies explored the potential benefits and limitations of reconstruction as a preservation treatment. Based on the premise that the best way to learn about reconstruction is to propose one, his hypothetical re-composition of the Basilica Aemilia was based on intense and wide-ranging research into the structure's history as well as Roman architecture and construction in general. For the adjacent Temple of the Divine Julius Caesar, the paucity of current knowledge about its original state led Eric to propose a new structure occupying the same space and of similar scale and style but in different materials (and protecting the archeological remains in place). In his thesis statement, Eric writes:

"This is a hypothetical proposition to learn about treatment options in order to understand what knowledge and research is required for each. It then investigates the possibilities of reconstruction as a conservation treatment. The focus on reconstruction serves as an academic exercise to integrate the past with the present without destroying the resources that make the site valuable to us and to future generations. This process requires the combination of archaeological investigation and research with architectural knowledge in order to

provide a comprehensive outline of what remains, what is known, what was, and what could be."

Similar proposals have a long history in Rome and elsewhere, and while reconstruction of ruined or non-extant buildings remains highly controversial, Eric chose to pursue the treatment hypothetically as a tool for learning about the historic site and the limitations and conditions under which reconstruction or completion might be justified. He continues:

"This proposal simply builds upon previous exploratory inquiry by taking credible theoretical reconstructions of the past and investigating what would be required to realize such a proposal. This process requires that we understand how much we know about the monument in order to make a judgment about whether there is sufficient evidence to allow for full reconstruction."

The thesis project, presented in hand-drafted watercolor-wash renderings, won the praise of faculty and guest critics. As a consequence of his Rome experience, Eric plans to pursue a career in the conservation of antiquities in Italy.

Just as the primary value of traveling abroad is to come home with a wider vision, so the experience of Rome contributes to our students' appreciation of their American heritage. Our undergraduates complete their academic year in Rome (now with a week in Paris along the way) with a one-week visit to Virginia and Washington D.C. Standing in

front of Monticello or the Lincoln Memorial with their studies in Italy fresh in their minds, they see the many European threads that have contributed to the unique American weave. Students in preservation, too, take from their understanding of international conservation theory and practice a context within which the historic preservation movement in the United States finds its place, discovering that the challenges of Charleston, Chicago or San Francisco are not so different from those of Rome, Venice or Paris. This perspective can only enrich our practice here at home.

The MSHP program, recognized by the National Council on Preservation Education, is open to students with previous degrees in architecture; alternatively, those who complete the course of study for a professional architecture degree at Notre Dame can earn the MSHP degree with one additional year of study. For more information, please consult our website: architecture.nd.edu/mshp.

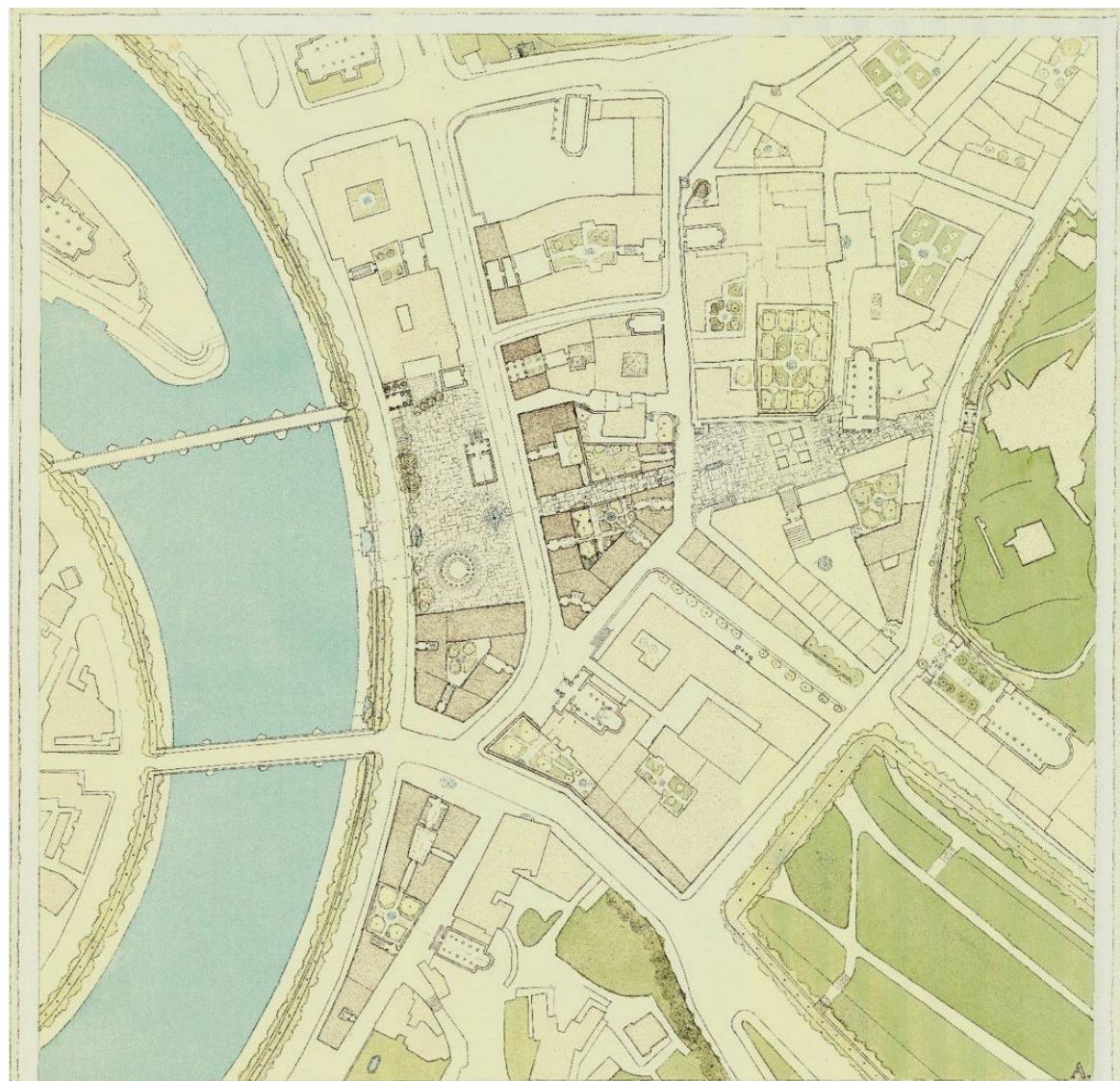
Steven W. Semes is Professor of Architecture and Director of the Graduate Program in Historic Preservation at the University of Notre Dame. He was Academic Director of the Notre Dame Rome Studies Program 2008-2011 and currently splits his teaching duties between Rome and the main campus. He is the author of The Future of the Past: A Conservation Ethic for Architecture, Urbanism, and Historic Preservation (2009) and The Architecture of the Classical Interior (2004), and has also written for many publications. He was the 2010 recipient of the Clem Labine Award.

	HERITAGE & CULTURAL SIGNIFICANCE	AUTHENTICITY	INTERPRETA-TION AND ED-UCATION	CONSERVATION & MAINTENANCE	RESTORATION
THE ATHENS CHARTER 1931 <i>THE ATHENS CHARTER FOR THE RESTORATION OF HISTORIC MONUMENTS</i> Adopted at: The First International Congress of Architects and Technicians of Historic Monuments Athens, Greece	<ul style="list-style-type: none"> The Conference, convinced that the question of the conservation of the artistic and archaeological property of mankind is one that interests the community of the States, which are wardens of civilization, hopes that the States, acting in the spirit of the Covenant of the League of Nations, will collaborate with each other on an ever-increasing scale and in a more concrete manner with a view to furthering the preservation of artistic and historic monuments; considers it highly desirable that qualified institutions and associations should, without any manner whatsoever prejudicing international public law, be given an opportunity of manifesting their interest in the protection of works of art in which civilization has been expressed to the highest degree and which would seem threatened with destruction. (Article 7) 	<ul style="list-style-type: none"> Proposed restoration projects are to be subjected to knowledgeable criticism to prevent mistakes which will cause loss of character and historical values to the structures. (Preamble, Point 2) 	<ul style="list-style-type: none"> The Conference, firmly convinced that the best guarantee in the matter of the preservation of monuments and works of art derives from the respect and attachment of the peoples themselves, [and] considering that these feelings can very largely be promoted by appropriate action on the part of public authorities, recommends that educators should urge children and young people to abstain from disfiguring monuments of every description and that they should teach them to take a greater and more general interest in the protection of these concrete testimonies of all ages of civilization. (Article 7) 	<ul style="list-style-type: none"> Whatever may be the variety of concrete cases, each of which are open to a different solution, the Conference noted that there predominates in the different countries represented a general tendency to abandon restorations in total and to avoid the attendant dangers by initiating a system of regular and permanent maintenance calculated to ensure the preservation of the buildings. (Article 1) In the case of ruins, scrupulous conservation is necessary, and steps should be taken to reinstate any original fragments that may be recovered (anastylosis), whenever this is possible; the new materials used for this purpose should in all cases be recognizable. (Article 6) With regard to other monuments, the experts unanimously agreed that, before any consolidation or partial restoration is undertaken, a thorough analysis should be made of the defects and the nature of the decay of these monuments. They recognized that each case needed to be treated individually. (Article 6) 	<ul style="list-style-type: none"> Proposed Restoration projects are to be subjected to knowledgeable criticism to prevent mistakes which will cause loss of character and historical values to the structures. (Preamble) When, as the result of decay or destruction, restoration appears to be indispensable, it recommends that the historic and artistic work of the past should be respected, without excluding the style of any given period. (Article 1) With regard to the preservation of monumental sculpture, the Conference is of opinion that the removal of works of art from the surroundings for which they were designed is, in principle, to be discouraged. It recommends, by way of precaution, the preservation of original models whenever these still exist or if this proves impossible, the taking of casts. (Article 5)
THE VENICE CHARTER 1964 <i>THE INTERNATIONAL CHARTER FOR THE CONSERVATION AND RESTORATION OF MONUMENTS AND SITES</i> Adopted by: The Second International Congress of Architects and Technicians of Historic Monuments Venice, Italy	<ul style="list-style-type: none"> The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event. This applies not only to great works of art but also to more modest works of the past which have acquired cultural significance with the passing of time. (Article 1) 	<ul style="list-style-type: none"> Imbued with a message from the past, the historic monuments of generations of people remain to the present day as living witnesses of their age-old traditions. People are becoming more and more conscious of the unity of human values and regard ancient monuments as a common heritage. The common responsibility to safeguard them for future generations is recognized. It is our duty to hand them on in the full richness of their authenticity. (Preamble) 		<ul style="list-style-type: none"> It is essential to the conservation of monuments that they be maintained on a permanent basis. (Article 4) The material used for integration should always be recognizable and its use should be the least that will ensure the conservation of a monument and the reinstatement of its form. (Article 15) 	<ul style="list-style-type: none"> Items of sculpture, painting or decoration which form an integral part of a monument may only be removed from it if this is the sole means of ensuring their preservation. (Article 8) The process of restoration is a highly specialized operation. Its aim is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents. It must stop at the point where conjecture begins, and in this case moreover any extra work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp. The restoration in any case must be preceded and followed by an archaeological and historical study of the monument. (Article 9) The valid contributions of all periods to the building of a monument must be respected, since unity of style is not the aim of a restoration. When a building includes the superimposed work of different periods, the revealing of the underlying state can only be justified in exceptional circumstances and when what is removed is of little interest and the material which is brought to light is of great historical, archaeological or aesthetic value, and its state of preservation good enough to justify the action. Evaluation of the importance of the elements involved and the decision as to what may be destroyed cannot rest solely on the individual in charge of the work. (Article 11) Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence. (Article 12)
THE SECRETARY'S STANDARDS 1977-1992 <i>THE SECRETARY OF THE INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES</i> Sponsored by: The United States Department of the Interior National Parks Service 1977 Revised: 1992 Washington D.C., United States of America		<ul style="list-style-type: none"> Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research. (Standards for Preservation; Article 3) Changes to a property that have acquired historic significance in their own right will be retained and preserved. (Standards for Preservation; Article 4) Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved. (Standards for Preservation; Article 5) 		<ul style="list-style-type: none"> Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features, rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project. (Standards for Preservation; Preamble) When the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, Preservation may be considered as a treatment. (Standards for Preservation; Preservation as a Treatment) 	<ul style="list-style-type: none"> Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project. (Standards for Restoration; Preamble) When the property's design, architectural, or historical significance during a particular period of time outweighs the potential loss of extant materials, features, spaces, and finishes that characterize other historical periods; when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned, Restoration may be considered as a treatment. Prior to undertaking work, a particular period of time, i.e., the restoration period, should be selected and justified, and a documentation plan for Restoration developed. (Standards for Preservation; Restoration as a Treatment)

ABOVE: As part of his studies of the international agreements on conservation best practices, Eric began work on a poster-sized reference guide that displays excerpts from important Charters and other documents—including the Venice Charter and the Secretary of the Interior's Standards for Historic Properties—according to different topics. Reading across, the table tells us how each document addresses the various topics; reading from top to bottom tells us how international thinking has evolved on a given issue. A portion of the table is previewed here, but the full table should be available soon as an educational reference for professionals and students alike. Photo: courtesy of Eric Stalheim and the author

RIGHT: Graduate student Eric Stalheim's project during his Fall 2016 semester in Rome, with Visiting Associate Professor Ettore Maria Mazzola, studied the Foro Boario area of Rome. This district near the Tiber River was the ancient cattle market and includes such monuments as the Temple of Portunus and the Round Temple of Hercules, as well as later structures like the Church of Santa Maria in Cosmedin, with its iconic sculpture of the Bocca della Verità (the "Mouth of Truth"). Eric prepared a master plan to re-urbanize the site left vacant by 20th-century demolitions, together with a graphic reconstruction of the Round Temple. Photo: courtesy of Eric Stalheim

OPPOSITE: Graduate student Eric Stalheim and Visiting Professor Paolo Vitti at the Castel Sant'Angelo in Rome, where Professor Vitti has been conducting research on the ancient Mausoleum of Hadrian. Much of the original Roman masonry structure remains today, enveloped in subsequent layers of construction that produced the monument we see today. His close physical analysis and detective work have increased our understanding of the history and original appearance of this iconic monument. Photo by the author



Lord Aeck Sargent has been working at the Georgia State Capitol in Atlanta for 25 years, and there's still more to do. Photos: Jonathon Hillyer unless otherwise noted



Georgia's Capitol: A Long-Term Project



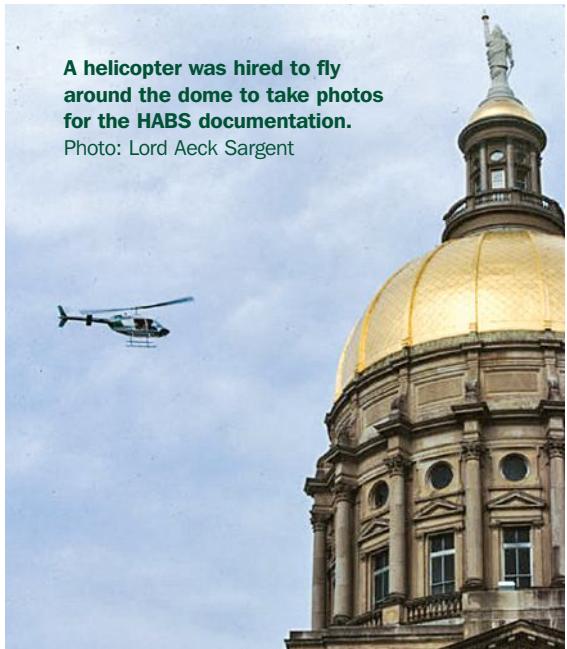
By Martha McDonald

PROJECT

Rehabilitation of Georgia State Capitol,
Atlanta, GA

ARCHITECT: Lord Aeck Sargent, Atlanta;
Susan Turner, AIA, Principal

A helicopter was hired to fly around the dome to take photos for the HABS documentation.
Photo: Lord Aeck Sargent



BUILT 1884-1889 IN THE CLASSICAL REVIVAL STYLE, the Georgia State Capitol is a focal point in downtown Atlanta with its 75-ft. gilded dome topped with the 15-ft., 2,000-lb. statue of Miss Freedom. Designed by Willoughby J. Edbrooke and Franklin Pierce Burnham of the Chicago firm of Edbrooke and Burnham, the four-story limestone building reaches a height of 237 ft. at the dome. The building was completed for just under \$1 million and was dedicated on July 4, 1889.

The main entrance on the west façade on Washington St. welcomes visitors via a four-story portico composed of six composite columns. The rear façade duplicates this entry and the Senate is located in the east wing, the House in the west wing. On the interior, white Georgia marble was used for floors and stairs, with pink Georgia Etowah flourie marble wainscot at the walls. Native Georgia woods were used, with cherry paneling lining the House and oak lining the Senate chambers. Statues, portraits and busts on every floor and on the exterior grounds celebrate well-known Georgia citizens such as Jimmy Carter and many others. The most recently installed statue honors Dr. Martin Luther King, Jr.

While its appearance is grand, this is basically a simple state capitol when compared to some others. A planned mural for the dome, for example, was never completed because of budget reasons. In addition, to save money, the exterior was made of limestone instead of the local white Georgia marble. Nevertheless, the capitol is well loved by its citizens and has served the state for generations. To this day, it still houses both the Senate and House chambers and their offices, the Governor's offices, as well as other state offices and the Appropriations Room (formerly the Old Supreme Court Room). In 1977, the building was named a National Historic Landmark.

The first renovation began in 1929 and there have been many others over the years. The most recent round of renovations was launched in 1993 when the state created a Capitol Commission with the goal of planning for the preservation of the building and insuring it would continue as a working capitol building. At that time, Lord Aeck Sargent (LAS) was working in the building.

"We were working in the building in 1993, doing fire protection, when the state decided to create the commission and they asked us to be a part of it,"

Timeline

1993 – Capitol Commission, HABS Survey, Plaster Failure

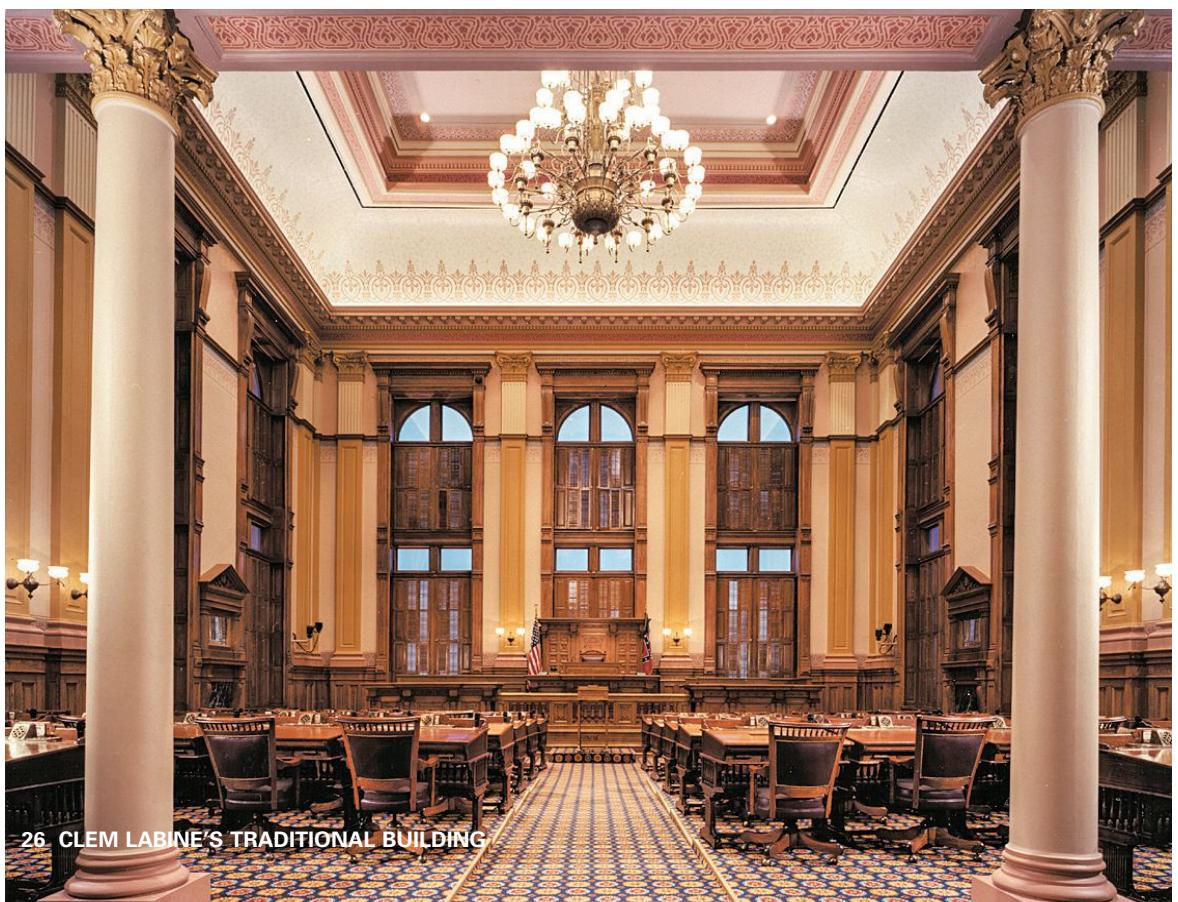
1995 – Public Space, House and Senate Chambers and Appropriations Room

2000 – Budget Office, First-floor Corridors, Georgia Capitol Museum, Exterior Restoration

TOP: Historic photo of the Senate Chambers.
Photo: courtesy of Georgia Building Authority

MIDDLE: The Senate Chambers before restoration. Photo: courtesy of Library of Congress

BOTTOM: The restored Senate Chambers.



says Susan Turner, AIA, principal, LAS. Under the leadership of Chair Dr. Timothy Crimmins, the commission was made up of a diverse group of people including representatives from the House and Senate, as well as representatives from the offices of the governor and the secretary of state, the state historic preservation office and other key individuals. The head of the Georgia Building Authority was also on the commission. “This diversity positioned them well to make headway with the building,” Turner notes.

The commission launched a Historic American Building Survey (HABS) of the building and it was just about completed when suddenly a piece of plaster fell off the ceiling in one of the atria. “Fortunately, no one was hurt,” says Turner. “We were asked to evaluate the plaster in the building. We found that all of the horizontal surfaces were adhered to hollow clay tile, and that the bond was failing, so that immediately launched us into repair mode. There were acres of plaster in the building.” This meant that the master plan had to be postponed so the repair and restoration could go forward.

She adds that the HABS documentation was tremendously helpful in guiding the preservation of the capitol. “HABS had just begun using digital technology at the time. They hired a helicopter to fly around the dome to take photos and together we produced some of the first CAD-based HABS documents. In addition, historian Anne Farrisee wrote a complete history of the building.”

The restoration of the plaster was just the beginning. “One thing led to the next and that launched the restoration project,” says Turner. “We had to put in place the necessary research and planning to inform securing and restoring the public spaces.” The LAS team hired Frank Welch, a prominent finishes analyst, to analyze paint and clear wood finishes in the capitol. He found that in the public spaces the original painted finishes were only two colors, a pale peach and pale green, very different from the paint scheme that had been put in place in 1970s—multiple shades of blue and gold gild. There was concern that the public would not like these original colors, so Turner’s team created a mock-up area and fortunately the pale historic colors were very well received.

Based on that research and the favorable response to the historic colors, LAS went forward to design the public space restoration. This work took several years because it was complex and because it had to be done in phases and during the time that the House and Senate were not in session.

2005 – Master Plan, Dome Structural Reinforcement, Miss Freedom Restoration, Roof Replacement, Exterior Stair Study, East Stair Restoration

2010 – Atria Plaster Repair
2013 – West Stair Restoration

TOP: Historic photo of the House Chambers.
Photo: courtesy of Georgia Building Authority

MIDDLE: The House Chambers before restoration. Photo: courtesy of Georgia Building Authority

BOTTOM: The restored House Chambers.



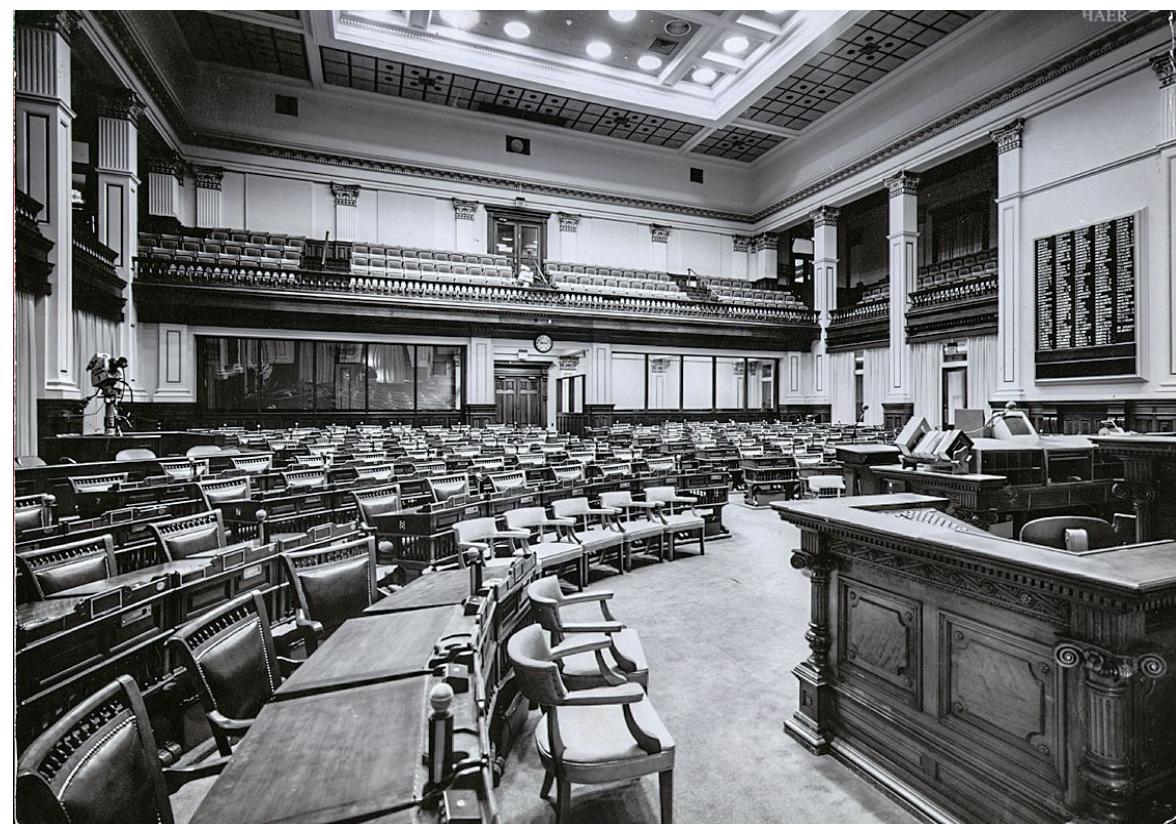
When they saw the work in the public spaces, the House and the Senate expressed interest in restoring their chambers—so once again the master plan was postponed. LAS proceeded with the restoration of these chambers and then they moved on to the other elaborate space, the Appropriations Room. These areas provided a number of challenges.

Many of the changes that had occurred over time were the result of integrating new technologies. “We started with the idea of reversibility,” says Turner. “The lifespan of technology is short, so we wanted to do everything so that it could be reversed without affecting the historic building.” To this end, they were able to create a unit that manages all of the technology and insert it into the historic legislators’ desks, where historic inkwells once existed. This allowed them to keep the original desks, which were in good condition.

Acoustics was another unusual technology-related challenge. Turner explains that over the years, in order to deaden the sound, the State had taken out the original wood louvered shutters and put Styrofoam insulation and curtains in the windows. And, to hide this on the exterior, they had replaced the clear glass with green glass. In addition, acoustic tile had been glued on the ceiling. “Worst of all,” she points out, “at the edge of ceiling, the large (about 8 ft.) plaster coves had been removed and replaced with acoustic panels. The coves were an important feature, so this was very unfortunate.”

LAS removed the Styrofoam, the curtains and the green glass and replaced the shutters and clear glass in the windows, but then they were faced with acoustic issues. The solution was to save the remaining historic materials by using the element that required reconstruction, the cove, to solve the acoustics. “We reproduced the cove with one made of a perforated metal material. When it was painted, you couldn’t see the perforations,” says Turner. In addition to restoring the original appearance of the chambers, the new cove helped solve the acoustic problem by hiding sound-absorbing materials behind it. “This went a long way toward solving the acoustic problem,” Turner notes. “This allowed us to limit other acoustic treatment to minimal fabric panels on the walls in the balcony, custom-dyed to match the walls. We also installed a linear diffuser above the cove that helped to integrate the new air conditioning as well.”

An interesting challenge in both chambers involved how to manage the voting screens. Originally both the House and the Senate had fireplaces with large





LEFT: In the 1970s, the public spaces had been painted multiple shades of blue and gold gild. Photo: Lord Aeck Sargent



BELOW: Following an analysis by Frank Welch, the public areas were returned to their original pale colors.



Another view of the public space after restoration.
Photo: Diane Kirkland



Delivering Miss Freedom back to her place on top of the dome. Photo: Lord Aek Sargent

overmantels on either side of the speaker. These overmantels had been removed to make room for the voting boards. “We, of course, wanted to put the fireplaces and overmantels back,” says Turner. The president of the Senate, who was very interested in the restoration, came up with a solution. It involved moving the voting board to a position behind a panel located behind the speaker. When there’s a vote, this panel can be raised to reveal the voting board. The rest of the time the voting board is hidden. This move opened the wall spaces so the fireplaces and overmantels could be restored.

The House, however, decided to keep the voting boards visible at all times, even when not in session. This decision was based on the fact that school groups come for tours and the boards are a big part of the lesson. Turner was pleased with this decision because it provided two different viable solutions. Now one chamber is interpreted as it was historically and the other displays its contemporary function. “We got the best of both worlds,” she says.

Another problem, one typical to many restorations, was the miles of cable needed for new technology throughout the chambers. The LAS team was able to take advantage of the attics above the chambers to hide some of them, but they had to look for other paths. “We found that the capitol originally had warm air heated in the basement that traveled through flues, so there were a number of paths inside the solid masonry walls,” Turner explains.

In the former Supreme Court Room, LAS researched and recreated the original furnishings because most of the furniture had been removed. Technology was a challenge here too, and the solution was to hide most of it inside the replicated judicial bench.

The issue of historic colors came up again in the rehabilitation of the House and Senate Chambers and the Appropriations Room. Most of the historical research relied on black-and-white photos from the 1890s, which meant that the original colors couldn’t



The offices before restoration.
Photo: courtesy of Georgia Building Authority



A suite of offices after restoration.

be seen. While Welsh’s paint analysis identified the many paint colors, the carpet colors were a mystery. LAS brought in Dr. William Seale, White House historian, to consult on the carpet colors, and he came up with a color palette for the House and the Senate Chambers. However, when it came to the Appropriations Room, there were no photos. By chance, Dorothy Olson, the curator of the Capitol Museum, found a piece of an old Brussels carpet in the back of a safe, “The colors worked amazingly well with the historic colors,” says Turner. “This was serendipitous.”

At this point the Budget Director became interested in restoring office spaces, so the LAS team restored a suite of offices, again postponing the

master plan. “We rehabilitated it back to the original materials and configuration,” Turner says. “Over the decades, different finishes and plywood paneling (we nicknamed it trailer paneling) has been added. We were hopeful that similar work could be done in all of the offices. That didn’t happen, but it did serve as a template for several other offices.”

The work in the offices was limited by changes that had been made over the years. Starting in 1960s and going through the 1980s, the growing government needed more space so they had created mezzanines between floors. “We couldn’t do anything that would be based on returning the original volumes because we were inhibited by the existence of the mezzanines,” Turner explains.



BELOW: The Old Supreme Court Room, now the Appropriations Room, after restoration.



The team had looked at other ways to find more office space. One study had proposed creating large underground spaces, similar to what was done to the capitol in Texas. "They created an enormous underground addition tied into the historic building and it was very sensitively done," says Turner, "but this would have been a huge project, and it never came to pass."

The master plan was finally completed in 2005. LAS worked on the interior for many years and then moved to the exterior. Miss Freedom, the exterior limestone and windows were restored and the roof was replaced. Most recent was the work on the four sets of monumental limestone stairs on each side of the building. "They had been cracking and moving

for a long time," says Turner, "so they needed major work." She explains that they looked at different ways to brace the stairs, but ultimately decided to carefully remove the treads and pour new continuous concrete slabs and then return the treads. "This was a big job. We did the east side a few years ago and the west side in 2014, and there are two more to go."

The cumulative total spent to date is approximately \$78 million. Two factors have kept this figure down, says Turner. "One is we haven't done the whole building. Secondly, our building is actually simple compared to other capitol buildings. They were very conscious of cost when they built the capitol, and were able to come in under budget. Other capitols built at the same time were much more

Key Suppliers

Construction Manager: **The Winter Construction Company**, Atlanta, GA

Construction Manager West Stairs: **Midwest Maintenance Inc.**, Piqua, OH

Historic Finishes Analysis: **Welsh Color & Conservation, Inc.**, Bryn Mawr, PA

Historic Plaster Conservator: **Architectural Conservation Services, Andrew Ladygo**, Manchester by the Sea, MA

Historic Lighting Restoration & Replication: **Jefferson Art Lighting Co.**, Ann Arbor, MI

West Stair Historic Lighting Replication: **St. Louis Antique Lighting Co.**, St. Louis, MO

Window Restoration **Shenandoah Restorations Inc.**, Irmo, SC

Plaster Restoration: **EverGreene Painting Studios**, New York, NY and **Finch Finishes**, Nashville, TN

Decorative Painting: **EverGreene Painting Studios**, New York, NY and **Conrad Schmidt Studios Inc.**, New Berlin, WI

Painting and Woodwork Restoration: **Goodman Decorating Co.**, Atlanta, GA

Millwork: **Mortensen Woodwork Inc.**, Union City, GA

Miss Freedom Statue Restoration: **Heather & Little, Ltd.**, Markham, ON

Historic Hardware Restoration & Reproduction: **Accurate Lock & Hardware**, Norwalk, CT

expensive, more lavish."

Three of the four main public spaces—the House, the Senate, and the Supreme Court Room (now the Appropriations Room)—are restored. Turner hopes to someday get to the fourth public space, the Senate Library. She notes that there's always more to do, and even some of the early restoration work is now in need of repair. The support of the legislators and the Capitol Commission has been crucial. "We had very strong support for everything for a good number of years, up until the bottom fell out of the economy," Turner says. "The Capitol Commission kept everyone informed. They were advocates for the project and that helped keep the momentum going and helped get funding."

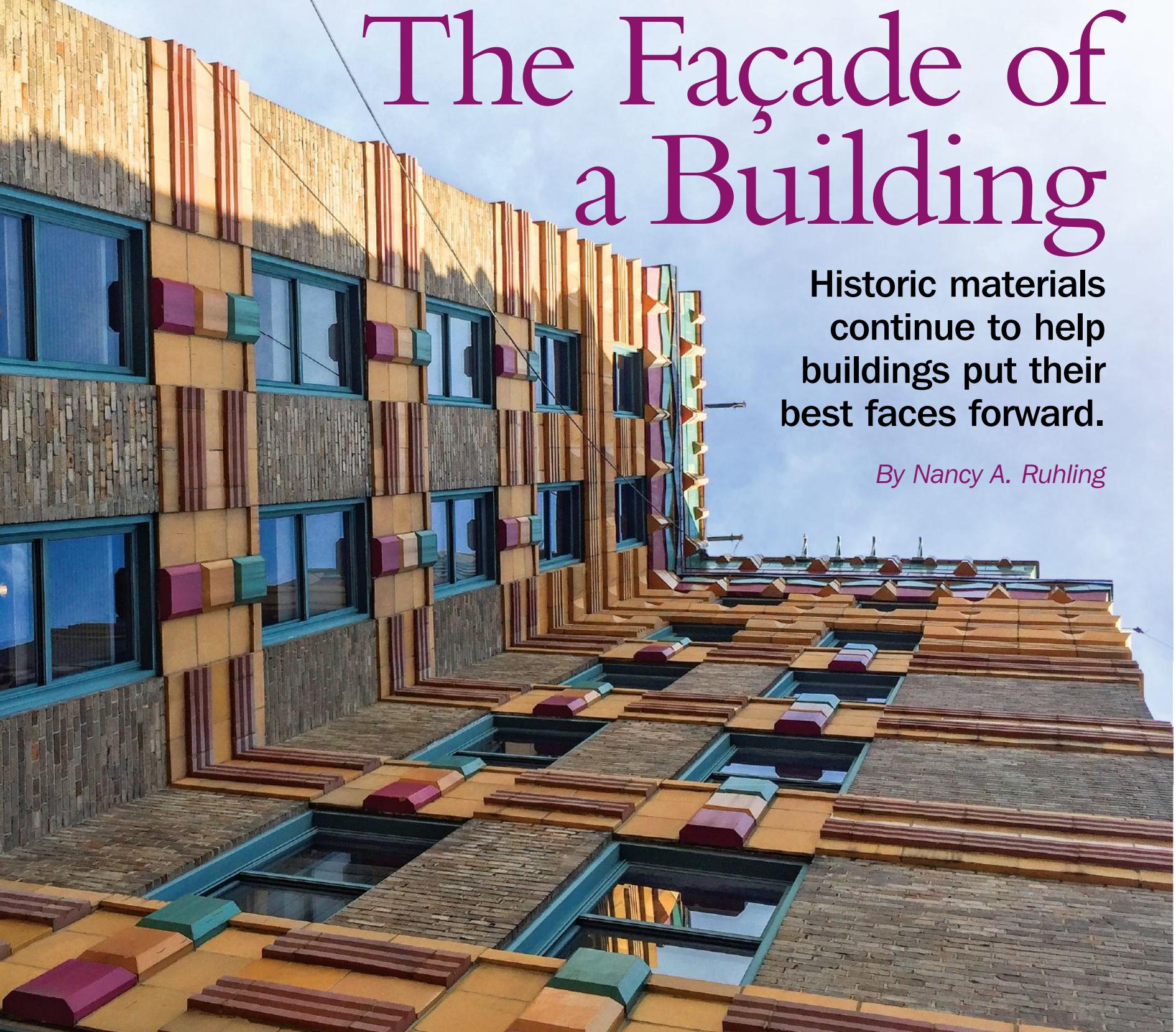


The historic limestone building
was named a National Historic
Landmark in 1977.

The Façade of a Building

Historic materials continue to help buildings put their best faces forward.

By Nancy A. Ruhling



WHEN IT COMES TO FAÇADE materials, bricks and terra cotta are two of the building blocks of historic design. These timeless elements have never gone out of style. Terra cotta, for example, has been making a comeback: Architects doing contemporary projects are specifying it because it is durable, fire-resistant and easily shaped into elaborate forms.

The trend, which started in Europe in the 1990s, has been picked up in the United States in projects like One Vanderbilt, a 1.6-million-sq-ft., 57-floor office tower under construction near Grand Central

Station in Midtown Manhattan that's taller than the Empire State Building.

"Terra cotta is green—it's clay, water and fire," says Bill Pottle, director of business development for Boston Valley Terra Cotta. "And you can do colorful custom glazes, which is what architects are asking for."

Jess Ouwerkerk, project manager/surveyor in the Northeast for Gladding, McBean, agrees, adding that the company recently created terra cotta panels for 207 W. 79th St., a new-construction residential project in Manhattan.

On the brick front, thin is in. New-construction

projects that want to convey an antique ambience increasingly are using this technique. "It's a lot less costly than masonry and doesn't require as much skill," says Mike Gavin of Gavin Historical Bricks. "It's installed in panels like tile. We are starting to tap into the potential on thin brick. I think demand will grow, especially on the commercial side."

Brian Belden, vice president of sales and marketing for Belden Brick Co., agrees that the market for thin bricks is growing.

Here are some of the companies that are remaking the face of the façade industry.



ABOVE: A composite rendering of a section of the Woolworth Building shows replacement terra cotta units created by Boston Valley Terra Cotta draftsmen.

Boston Valley Terra Cotta Orchard Park, NY

One of only two major terra cotta manufacturers in the United States, the company was established by the Krouse family in 1981, following its purchase of Boston Valley Pottery which was founded in 1889. The original company made bricks and clay pots. The company, which is housed in a 185,000-sq.-ft. work space, has over 135 employees.

It combines historical handcraftsmanship with a modern infrastructure and 3-D modeling. Digital survey photos are scanned and Rhino software is used to create drawings, shop tickets and tool paths for the CNC machines to run. The company does hand and digital sculpting.

Boston Valley Terra Cotta's first project, the restoration of Louis Sullivan's Guaranty Building in Buffalo, NY, prepared it for work on other significant historic buildings.

The Woolworth Building in New York City

Recently, the company completed work on the Woolworth Building, a National Historic Landmark and a New York City Landmark. The Neo-Gothic icon was designed by architect Cass Gilbert for F.W. Woolworth. Opened in 1913, the 792-ft., 58-floor building, which the dime store magnate used as his company headquarters, is one of the 100 tallest in the United States and one of the 30 highest in the city.

Nearly a century later, Boston Valley Terra Cotta was hired by the masonry firm Nicholson & Galloway of Glen Head, NY, to repair the terra cotta on the top 30 floors, which had been bought by an investment group led by the New York developer Alchemy Partners for conversion to luxury condominiums. These Woolworth Tower Residences include a five-level penthouse.

"We went there to survey the building," says Pottle. "Some of the pieces are very elaborate and technical." Re-creating the terra-cotta pieces, which numbered 3,550, he says, was easy. Getting them to the building was a real challenge. "There were a lot of logistics to getting them to the 53rd floor," he says. "New York City has stringent rules on truck sizes and timing and then there are OSHA rules for the scaffolding."

BELOW: Boston Valley Terra Cotta created the new ornamental cartouche (top) for Louis Sullivan's Gage Building. The bottom shows the original. Photos: Boston Valley Terra Cotta

BOTTOM: A piece of Boston Valley Terra's Cotta's replica of the detailed ornamentation of 35 E. Wacker displayed next to the original.



The Jewelers' Building in Chicago

Since 2016, Boston Valley Terra Cotta has been repairing and replacing the terra cotta on the Jewelers' Building at 35 E. Wacker St. in Chicago. The 523-ft., 40-story building, which is in the city's Loop, was co-designed by Joachim G. Giaver and Frederick P. Dinkelberg. Constructed between 1925 and 1927, it was one of country's tallest buildings. It's on that National Register of Historic Places and has

been designated a Chicago landmark.

Boston Valley Terra Cotta is particularly proud of the work it has done on Louis Sullivan buildings, including the Gage Building in Chicago and the Home Building Association Bank in Newark, OH. "We have been fortunate to work on some of the most iconic buildings in America," Pottle says. "But the Louis Sullivan work holds a special place for us because that's where we started."



Gladding, McBean created some 650 terra-cotta pieces for Two Park Ave., a New York City landmark. Photos: Gladding, McBean

BELOW LEFT AND RIGHT: The colorful, ornamental terra-cotta at Two Park Ave. includes jewel-tone pieces (right).



Gladding, McBean

Lincoln, CA

The family-owned company, founded in 1875, is one of two terra-cotta makers in the United States. In addition to terra cotta, it makes roof tiles, pottery, floor tiles and clay pipes.

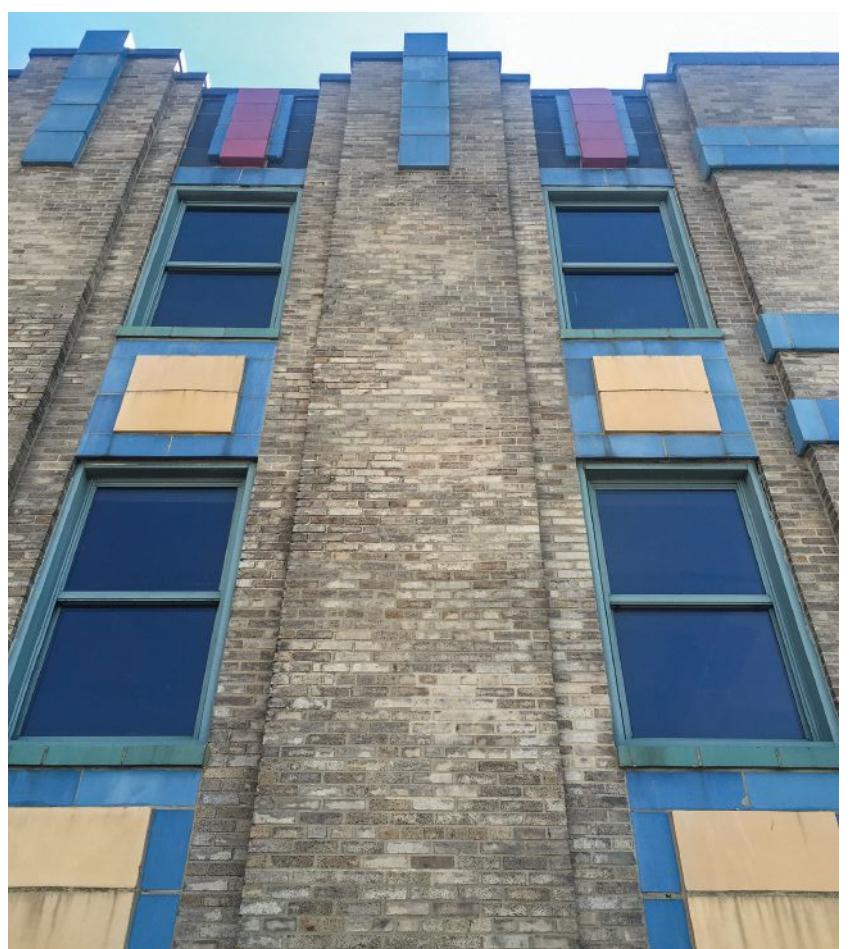
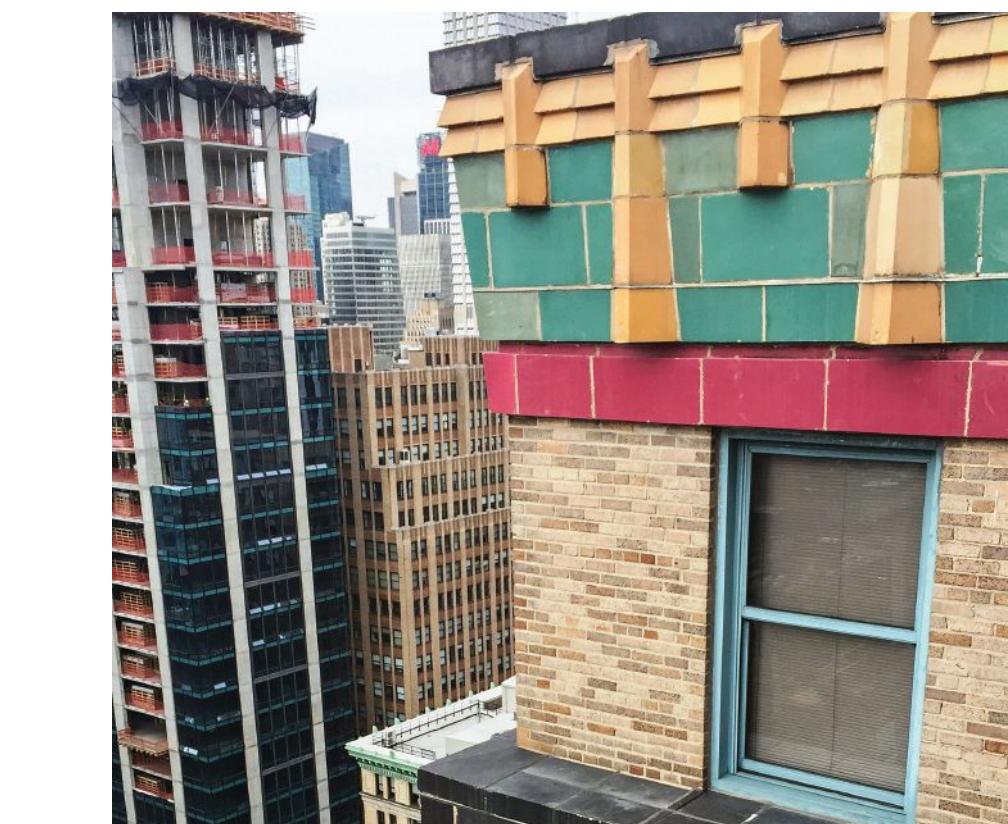
Two Park Ave., New York City

Gladding, McBean created some 650 terra-cotta pieces for Manhattan's Two Park Avenue, a New York City landmark designed by architect Ely Jacques and completed in 1927. The Art Deco/Modernist style commercial structure, which has 29 above-ground floors, features a series of setbacks decorated with geometrical terra-cotta ornamentation.

After gathering fragments of the highly ornamental units and using various site survey methods for the other units, Gladding, McBean made replacement pieces, which range from 12 to 18 in. tall by 8 in. wide to 2 ft. tall and 2 ft. wide. The jewel-tone pieces—black, magenta, bright green, tan, two yellows and azure—have multiple glazes.

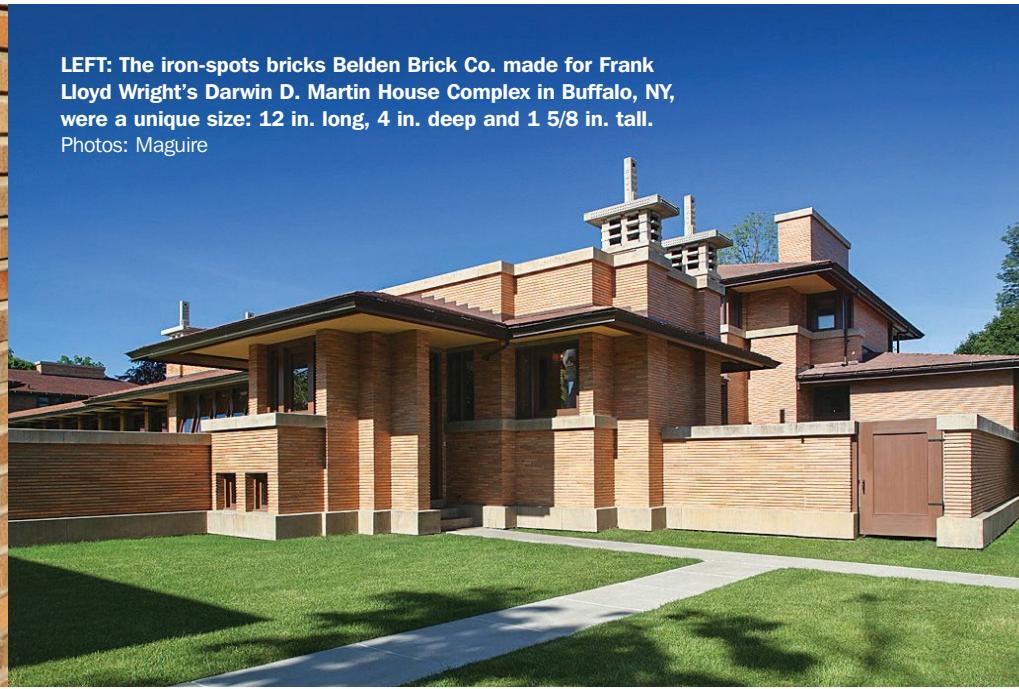
"Recreating the glazes was exciting for our glaze ceramicists," Jess Ouwerkerk, project manager/surveyor in the Northeast says. "We typically only have to develop one or two colors for a building. This building is distinctive because it is not only the terra cotta's form but also the varying glaze colors that work to create patterns on the façade. Matching existing glazes can be complex since they have to be formulated with materials available to us now, and these can be different from historic materials."

Although the original terra-cotta pieces were handmade, Gladding, McBean used an extrusion process that Ouwerkerk compared to pasta making to create the units that had simpler geometric forms. "Material is extruded through a die and then cut into units," Ouwerkerk says. "As a result, it is a faster process than hand-pressing. The extruded units are true to the form of the original pieces; however, their production has been modernized and streamlined. Extrusion doesn't alter how the units appear on the façade of the building although they might attach into the building a bit differently."





LEFT: The iron-spots bricks Belden Brick Co. made for Frank Lloyd Wright's Darwin D. Martin House Complex in Buffalo, NY, were a unique size: 12 in. long, 4 in. deep and 1 5/8 in. tall.
Photos: Maguire



BRICKS AND PAVERS

The Belden Brick Co.

Canton, OH

The family-owned company traces its roots to the Diebold Fire Brick Co., which was founded in 1885 by Henry S. Belden. The Beldens—Robert F. and son Robert T. along with cousins Brian and Bradley—are the principals in what has become the nation's sixth largest brick manufacturer in America.

The company, which has an annual production capacity of 250 million bricks, operates five manufacturing plants and one saw house in Sugarcreek, OH. It specializes in manufacturing custom extruded and molded bricks that match traditional colors and sizes.

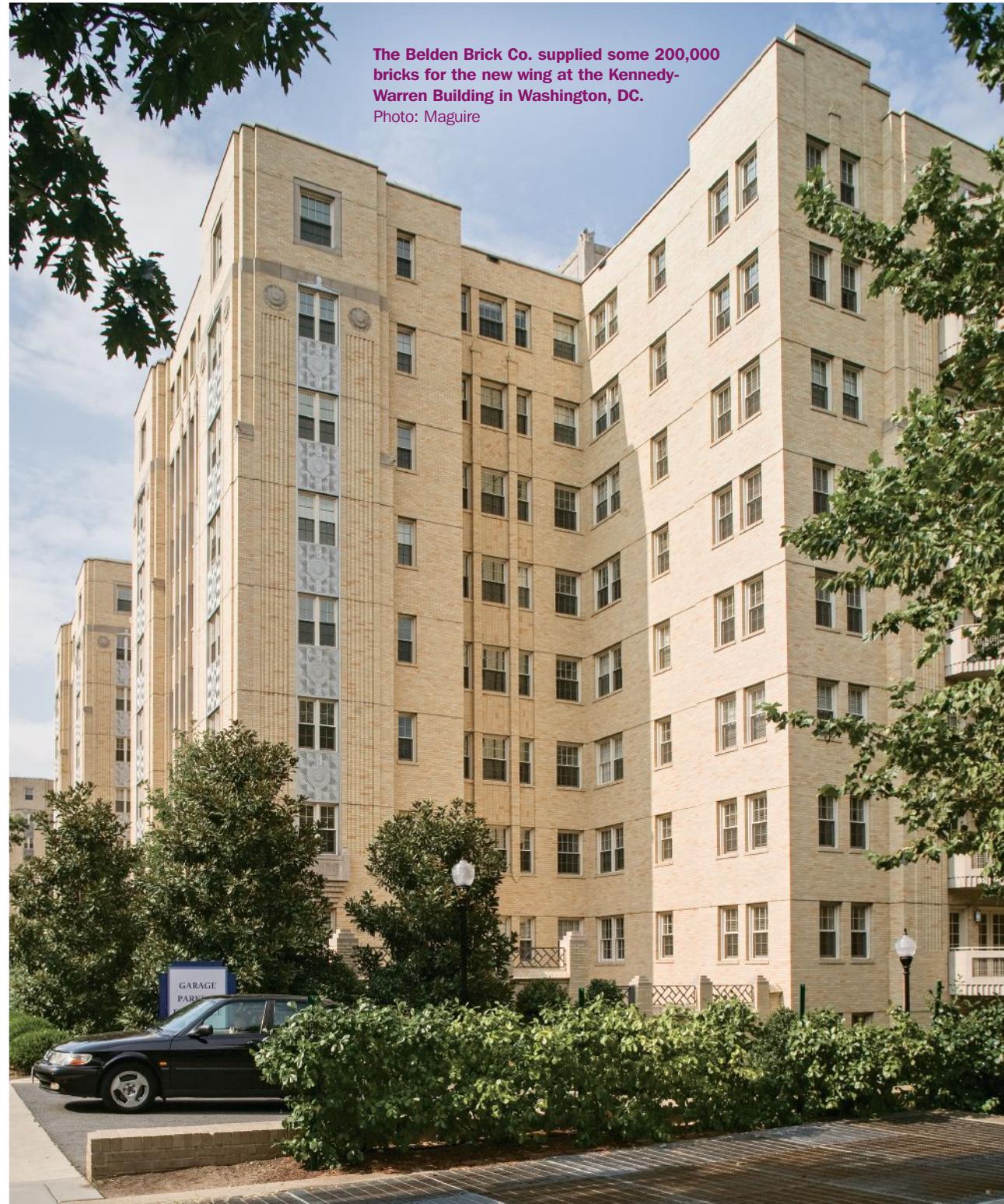
Brian Belden, vice president of sales and marketing, says that the company is able to produce replicas of historic bricks because it has five plants that span nearly a century. Plant No. 4, built in the 1920s, features traditional beehive kilns; Plant No. 6 was built in the 1950s; No. 8 was added in 1968; No. 3, which produces molded brick, was acquired in the 1970s and rebuilt in the 1980s; and the newest, No. 2, was built in 2000.

Belden Brick uses photos or samples to create the replicas. "Sometimes, we have the appropriate bricks in our inventory," Belden says. "If we don't have it, we create it. Usually, it's just a matter of tweaking the materials, changing the fire temperature or including additives like manganese to get the right color."

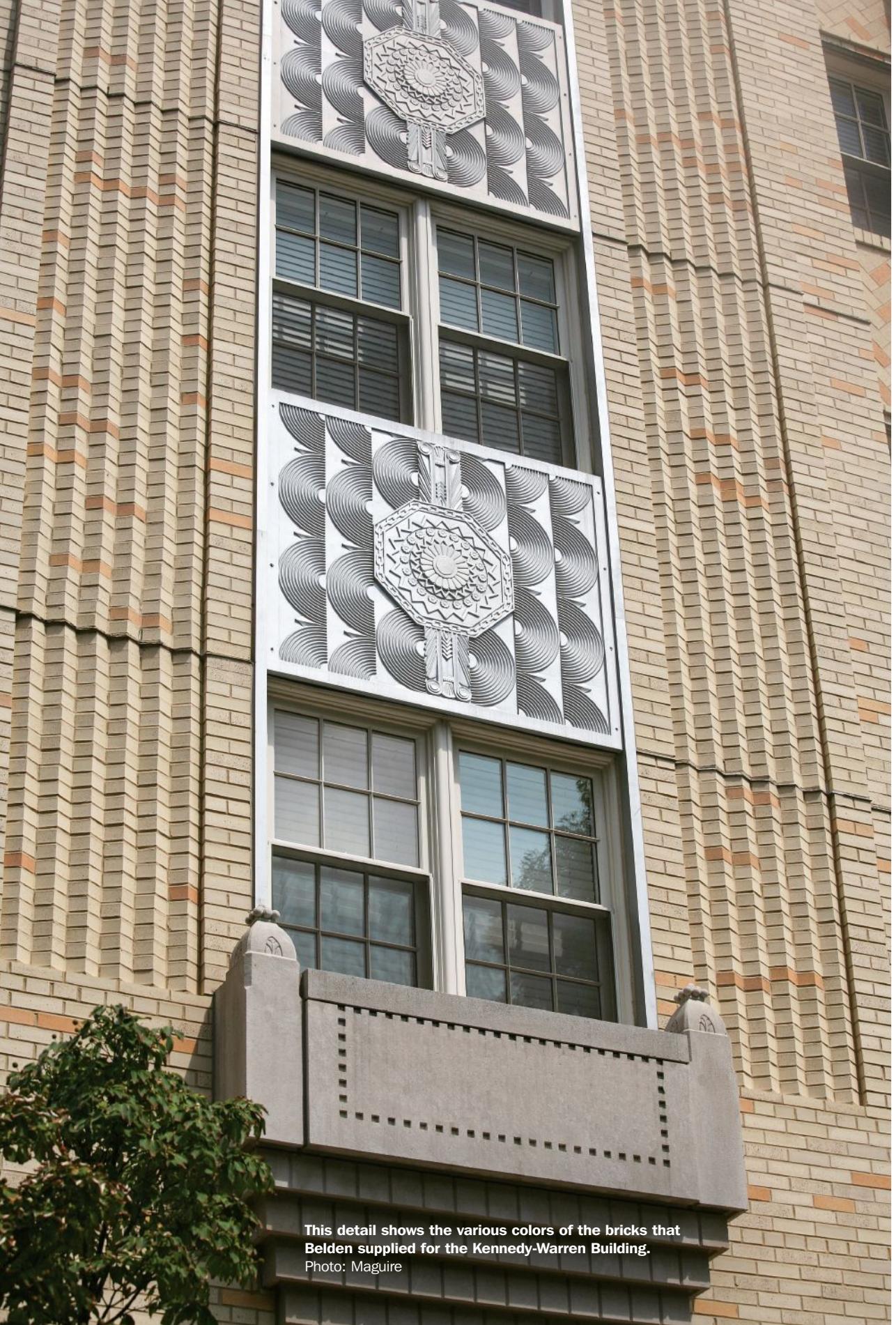
Frank Lloyd Wright's Darwin D. Martin House Complex in Buffalo, New York

Belden Brick made custom bricks for the Darwin D. Martin House Complex in Buffalo, NY, which was constructed between 1903 and 1905. The complex—the Martin House, the Barton House, a carriage house, conservatory and pergola—is considered one of Frank Lloyd Wright's greatest Prairie School projects.

The restoration, which took some 40,000 bricks, included reconstructing the demolished outbuildings. The iron-spots brick, which Belden made in the 1920s beehive kilns in its No. 4 plant, was a unique size—12 in. long, 4 in. deep and 1 5/8 in. tall. (A typical Roman brick is 11 1/8 in. by 3 1/8 in. by 1 1/8 in.) "We got the



The Belden Brick Co. supplied some 200,000 bricks for the new wing at the Kennedy-Warren Building in Washington, DC.
Photo: Maguire



color by changing some of our firing temperatures and flashing in the kiln," Belden says. "It was the most difficult part of the project."

Kennedy-Warren Building, Washington, DC

When a wing was added to the historic Kennedy-Warren apartment house in Washington, DC, Belden Brick provided matching brick, including some in special shapes. The Art Deco building, a District of Columbia Historic Landmark that is on the National Register of Historic Places, was designed by Joseph Younger. It opened in 1931

with 210 apartments. A wing, part of the original plans, was added in 1935, but the Great Depression delayed the other wing, on the south side, until 2004.

The 21st-century wing followed Younger's exterior design and included some 200,000 bricks. "There were multiple colors of brick used that ranged from creamy grays to iron-spot buff," Belden says. "These were stock items, and we blended them together from two of our plants. The grays came from No. 8, and the buff from the 1920s plant, No. 4."



Gavin Historical Bricks

Iowa City, IA

The largest supplier of reclaimed antique paving and building material in America, Gavin Historical Bricks has shipped product to every state in the country. The company was founded 20 years ago by John Gavin. His son, Mike, joined him 15 years ago. "It started as a hobby," Mike says. "My dad got interested in the old pavers that were being removed from the streets in Williamsburg, IA. He bought some and did his driveway. He had a lot left over."

Initially, the company concentrated on paving stones, which still forms the bulk of its business. It also buys antique brick from demolition companies. "We want ultra-high quality," Mike says. "We're choosy about which projects we buy from. Antique brick and pavers are not in endless supply. They are a luxury item that gives an authentic, unique look."

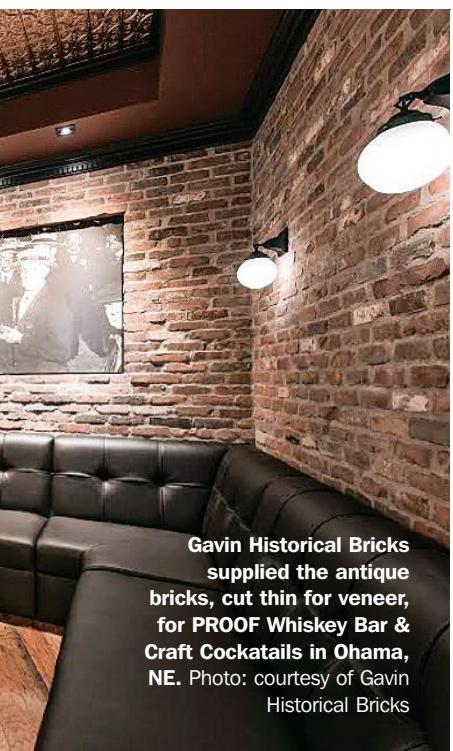
Although the company recently bought a large quantity of granite cobblestones from a St. Louis street, Mike says that they are "tougher and tougher to come by" because towns are preserving what they have.

The company, which includes a crew of eight, works on residential as well as commercial projects. "Our bricks and pavers are in the homes of variety of people—Hollywood celebrities, Nashville musicians and CEOs," he says. "And our commercial side has really grown."

At Mateo, Los Angeles

Gavin Historical Bricks supplied four kinds of antique brick for At Mateo, a new-construction dining and shopping development in Los Angeles' Arts District. "This was one of our biggest projects," Mike says. "We supplied hundreds of thousands of bricks that were saw-cut to $\frac{3}{8}$ of an inch."

The antique brick, which was used on the exteriors and on some interiors, brings the development in sync with the surrounding warehouse spaces that date from the early 20th century. "The architect and designer wanted to make it look like it happened organically," he says.



Firehouse Hook and Ladder No. 8, New York City

Built in 1903, the Beaux-Arts firehouse, which starred in both *Ghostbusters* movies, is undergoing a \$6-million renovation that includes restoration of parts of its brick façade.

Gavin Historical Bricks supplied about 1,000 antique bricks for the project. "They sent us photos and we matched the age and look of the existing brick," Mike says. "We did it all while sitting in our offices in Iowa City."

Mike says that Gavin Historical Bricks is excited about the future. "We're really passionate about reclaiming antique brick and stone," he says. "We think demand will continue to grow."

MOLD-MAKING AND CASTING COMPOUNDS

ABATRON INC. Kenosha, WI

The family-owned company, which was founded in 1959, manufactures flexible mold-making and casting compounds. It also creates molds and castings.

Most of its castings are made with epoxy, plaster and concrete. During the 1980s, the company expanded and began to fill the demand for high-quality building restoration products. ABATRON provides products that are easy and safe to use and that are environmentally safe, permanent and at the top of their product category in performance.

Lion's Head Mold and Casting

The lion's head that ABATRON uses in its publicity photos and offers in its catalog was bought at a silent auction in St. Louis. It originally decorated the façade of a hotel and was saved from the wrecker's ball when the building was razed.

"A customer recently wanted castings for her shop," says President Marsha Caporaso, whose husband founded ABATRON. "We found an original mold that we made years ago and made the castings. The customer was thrilled."

The casting was made with ABATRON's WoodCast™, a lightweight epoxy casting compound, and WoodEpoxy®, a lightweight epoxy wood filler. The mold was made with MasterMold 12-3®, a flexible polyurethane paste that was developed to

make molds of architectural elements that cannot be removed from the site.

"The challenge in making the mold was that it has to be flexible enough to be pulled from deep undercuts and strong enough not to tear," Caporaso says. The one-part mold is reusable. The model was coated with a release agent to prevent MasterMold® from sticking to it. A thin layer of MasterMold® was brushed on the model followed by a thicker layer (1/4- to 3/8-in.) applied with a putty knife.

Finials

ABATRON made three finials, each 25x13 in., from a hollow-metal model. The mold was made with MasterMold 12-8®, a pourable version of MasterMold 12-3®. A form to contain the liquid material was fashioned. "The biggest challenge was the widely varying dimensions of the model," Caporaso says.

The castings, which were made with WoodCast™ and WoodEpoxy®, a lightweight putty that can be applied in relatively thin layers to create hollow castings, were made in stages. The ball tops of the finials were reinforced with wooden dowels.

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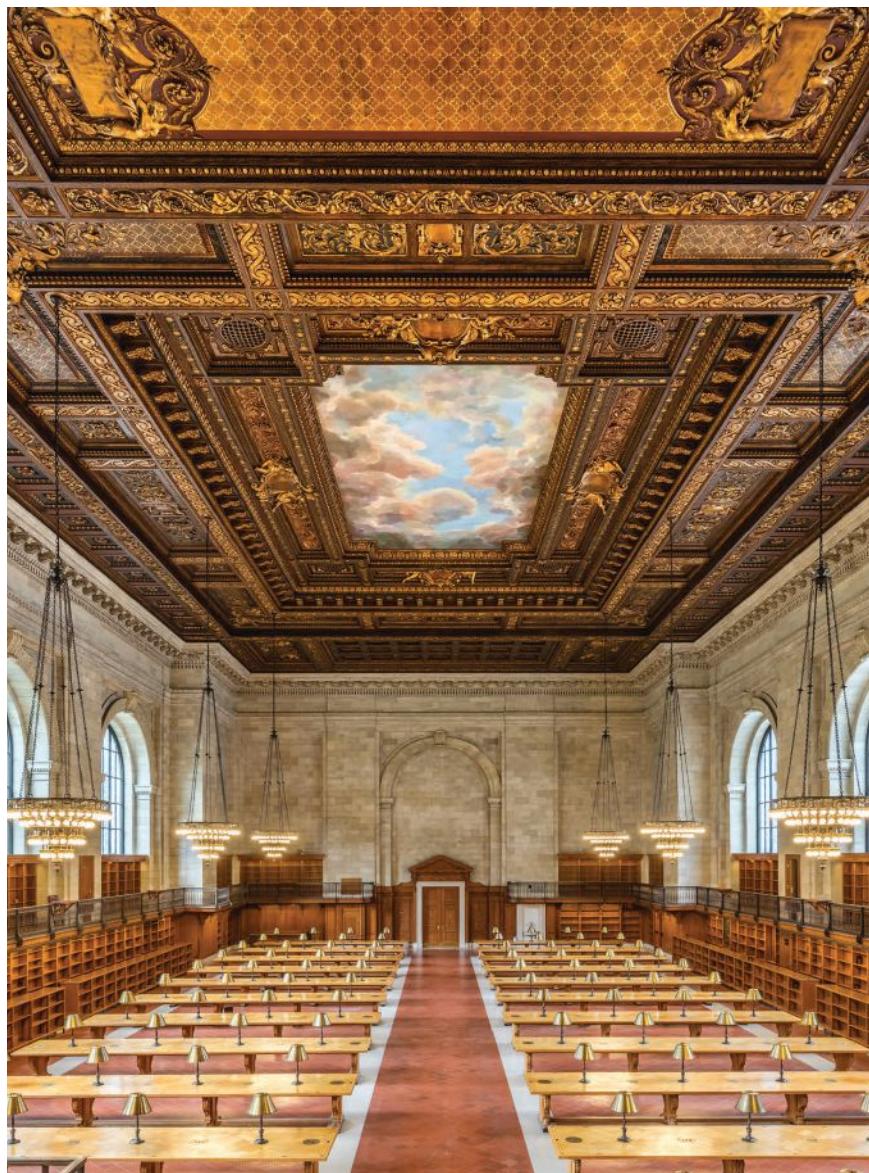
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Bovard Studio restored all of the stained glass for St. Mary of the Woods College, IN, plus added new vented storm glazing to the stained-glass windows.



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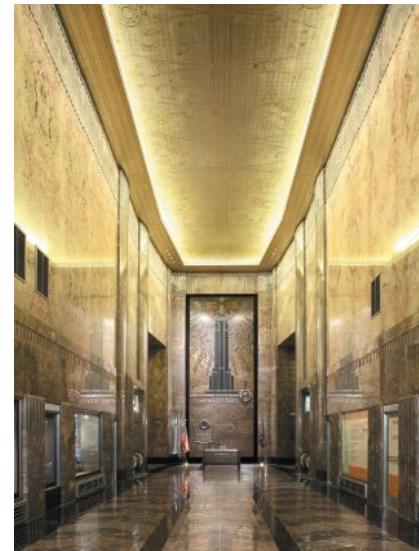
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EverGreene re-created the aluminum and gold leaf ceiling mural in the lobby and hallways of the Empire State Building; work also included reinstating historic glass panels in the lobby, designed and cut based on historic plans and photographs.



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These fluted columns were supplied by **Haddonstone (USA) Ltd.**

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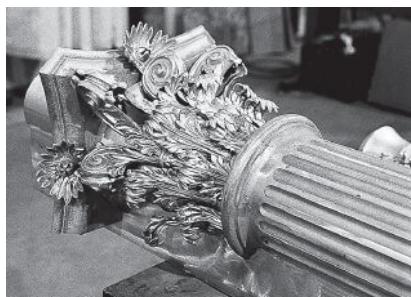
800-225-1414; Fax: 801-280-2493

www.historicalarts.com

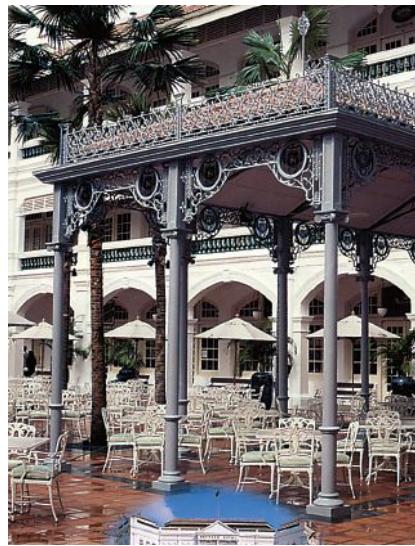
West Jordan, UT 84081

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snow guards, cupolas, planters, fireplace tools & more; iron, bronze, aluminum & steel; restoration services.

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Historical Arts & Casting designed and fabricated the Corinthian capital for this fluted column.



This intricate canopy with cresting and columns was custom fabricated by **Robinson Iron Corp.** for the Raffles Hotel in Singapore.

Robinson Iron Corp.

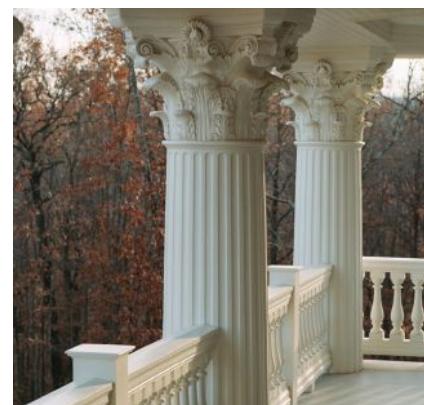
800-824-2157; Fax: 256-329-8960

www.robinsoniron.com

Alexander City, AL 35010

Designer & installer of custom metalwork: fountains, columns, fences, doors, railings, sculpture, benches, grilles, cresting, street lighting & gazebos; wrought iron/steel, aluminum, bronze & cast iron; historical restoration.

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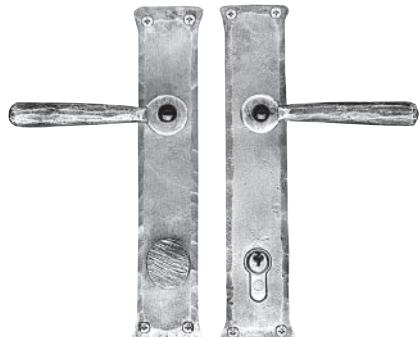
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Craftsman/Mission style doors are available from **Coppa Woodworking**.

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www.erbutler.com

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This ornate door handle and matching escutcheon are the work of **E.R. Butler**.

Historical Arts & Casting, Inc.

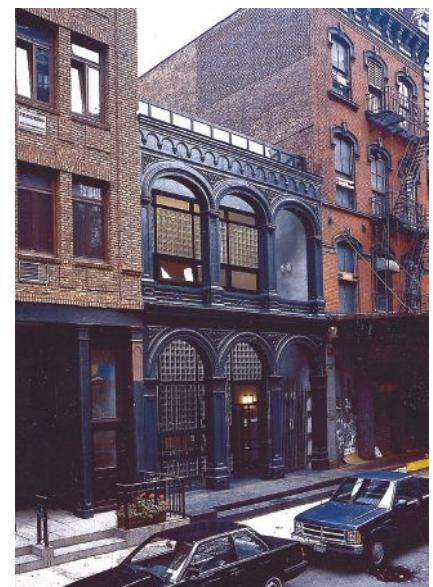
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Historical Arts & Casting, Inc. designs, manufactures and installs metal doors, windows and other exterior elements.

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www.vintagehardware.com

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This solid mahogany double "Old Fashion" screen/storm door with satin nickel hardware is available from **Vintage Doors**.

Vintage Doors

800-787-2001; Fax: 315-324-6531

www.vintagedoors.com

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This weave knob is one of many available from **Von Morris**.



Wiemann Metalcraft fabricated this bronze door with insulated glass.

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www.wmcraft.com

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Architectural Components, Inc.

413-367-9441; Fax: 413-367-9461

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www.aresource.com

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Supplier of historically styled hardware: sash pulleys, lifts & locks, sash chain & rope; weather stripping; patented sash weights.

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Historical Arts & Casting restored and re-installed the cast-iron windows in this building in New York City.

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www.historicalarts.com

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www.kolbe-kolbe.com
Wausau, WI 54401

Manufacturer of windows & doors: traditional details; extruded aluminum-clad, roll-formed aluminum-clad, wood & vinyl energy-efficient windows & doors; fiberglass doors.



Marvin Windows supplied clad Ultimate double-hung windows for the McLane and Fahey residence halls at Dartmouth College, Hanover, NH, a LEED Gold project.

Marvin Windows and Doors
888-537-7828; Fax: 651-452-3074
www.marvin.com
Warroad, MN 56763

Manufacturer of wood windows & doors: clad & clad-wood; special shapes; custom sizes & more than 11,000 standard sizes; historical replicas; interior & exterior storm windows.

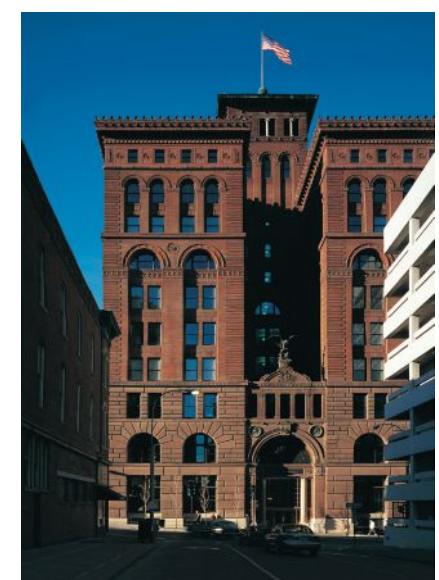
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Parrett Windows & Doors replicated the historical sash windows for the Dallas County Courthouse in Adel, IA.

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www.phelpsccompany.com

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Shuttercraft manufactured the mortise-amp;-tenon shutters for this building.

Shuttercraft, Inc.

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www.shuttercraft.com

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Manufacturer of authentic mortise-amp;-tenon wood shutters: cedar & mahogany, exterior movable & fixed louver, board & batten & raised panel; cut-outs, capping, arches & more; hinges & holdbacks; interior louvers, Colonial panels & open frame; painting services; made in USA; family-owned company since 1986; ships nationwide.

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Woodstone custom fabricated this fanlite using traditional methods of wood joinery.

Woodstone Company

603-445-2449; Fax: 603-445-0174

www.woodstone.com

North Walpole, NH 03609

Custom fabricator, distributor & supplier of doors, windows & shutters: paneled doors & complete entryways; storm & screen doors; screen windows; most wood species; coped mortise-amp;-tenon joinery; historical & landmark specifications.

Storefronts & Façades

Bonstone Materials Corp.

262-363-9877; Fax: 262-363-9879

www.bonstone.com

Mukwonago, WI 53149

Manufacturer of epoxy-repair & fabrication materials for stone: products used for highrise stone-façade anchoring, full mitered corners, fabrication, backer-block fastening, repair of filigree, crack injection & patching.



Kopelov Cut Stone quarried and fabricated the brownstone for the renovation of the old Chronicle Building, San Francisco, CA.

Kopelov Cut Stone, Inc.

812-675-0099; No Fax

www.kopelovcutstone.com

Bedford, IN 47421

Fabricator of architectural stone elements: for restoration contractors, commercial builders, custom designers & homeowners; high quality cutting & decorative carving; façades, mantels, monuments, sills, capitals & columns.



Kreilick Conservation worked on the Cooper-Hewitt entry canopy.

Kreilick Conservation LLC.

215-572-6616; No Fax

www.kreilickconservation.com

Oreland, PA 19075

Provider of laboratory & field analysis of materials, condition assessments, emergency response & stabilization, treatment, documentation & maintenance of metallic & masonry architectural elements, monuments, sculpture & objects; founded in 1996.

[Call for more information.](#)

Rugo Stone, LLC

571-642-2672; Fax: 571-642-2678

www.rugostone.com

Lorton, VA 22079

Masonry contractor: exterior stonework & facade restoration.

Boston Valley Terra Cotta manufactured approximately 1,000 ornate architectural terra-cotta replacement elements for this building.

Boston Valley Terra Cotta

716-649-7490; Fax: 716-649-7688

www.bostonvalley.com

Orchard Park, NY 14217

Supplier of architectural terra-cotta façade & roof tile products: historically accurate; for restoration & new construction.



Corinthian columns from **Haddonstone** create an imposing entrance at a major retail development.

Haddonstone (USA), Ltd.

719-948-4554; Fax: 719-948-4285

www.haddonstone.com

Pueblo, CO 81001

Manufacturer of classical & contemporary cast limestone: columns, balustrades, benches, planters, pavers, fountains, gazebos, interior ornament, mantels, statuary & more; 500+ designs; custom designs.

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Vermont Verde Antique LLC

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www.vtverde.com

Pittsford, VT 05763

Quarry of green serpentine stone for commercial & residential applications: available in slabs, tiles & blocks; large 40,000 sq. ft. main facility available to tour; LEED certified for commercial & residential use.

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Vermont Verde provided the serpentine stone for this facade.

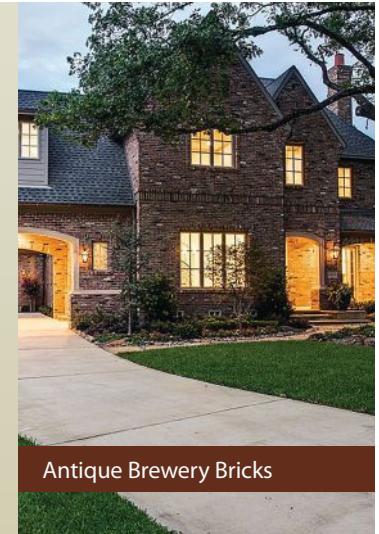
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Gavin Historical Bricks supplied its reclaimed Old English Cobblestone for this driveway in the Fingerlakes region of NY.

Gavin Historical Bricks, Inc.

319-354-5251; Fax: 319-688-3086

www.historicalbricks.com

Iowa City, IA 52245

Supplier of antique paving & building materials: specialists in new construction with an Old World look as well as historic restoration projects; pavers, cobblestones, clinker brick & more.

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This aluminum and bronze fountain by **Historical Arts & Casting** stands 12 ft. 3 in. tall with a bowl diameter of 19 ft. 2 1/2 in.

Historical Arts & Casting, Inc.

800-225-1414; Fax: 801-280-2493

www.historicalarts.com

West Jordan, UT 84081

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snow guards, cupolas, planters, fireplace tools & more; iron, bronze, aluminum & steel; restoration services.

[Call for more information.](#)



Haddonstone created this 176-in.-tall Large Lotus tiered fountain for a client in the US.

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King Architectural Metals fabricated this gate with scroll components and spear points.

King Architectural Metals

800-542-2379; Fax: 800-948-5558

www.kingmetals.com

Dallas, TX 75228

Wholesale supplier of ornamental & architectural metal components: staircases, handrails, gates, fences, furniture, mailboxes, lampposts, finials & fireplace screens; wrought iron & aluminum.

[Call for more information.](#)



Kreilick Conservation worked on the Soldiers & Sailors Monument at the Dayton National Cemetery.



R. Alden Marshall & Assoc. restored the Texas Heroes monument in Galveston, TX.

R. Alden Marshall & Associates

717-805-3114; No Fax

www.raldenmarshall.com

New Cumberland, PA 17070

Material science laboratory & preservation studio for the conservation of art & architecture: monuments, sculptures, paintings & murals & more; projects include national historic sites as well as a ecclesiastical commissions.

[Call for more information.](#)



Robinson Iron custom fabricated this three-tiered, cast-iron fountain.

Robinson Iron Corp.

800-824-2157; Fax: 256-329-8960

www.robinsoniron.com

Alexander City, AL 35010

Designer & installer of custom metalwork: fountains, columns, fences, doors, railings, sculpture, benches, grilles, cresting, street lighting & gazebos; wrought iron/steel, aluminum, bronze & cast iron; historical restoration.

[Call for more information.](#)



Wiemann designed and fabricated these steel gates with forged components.

Wiemann Metalcraft

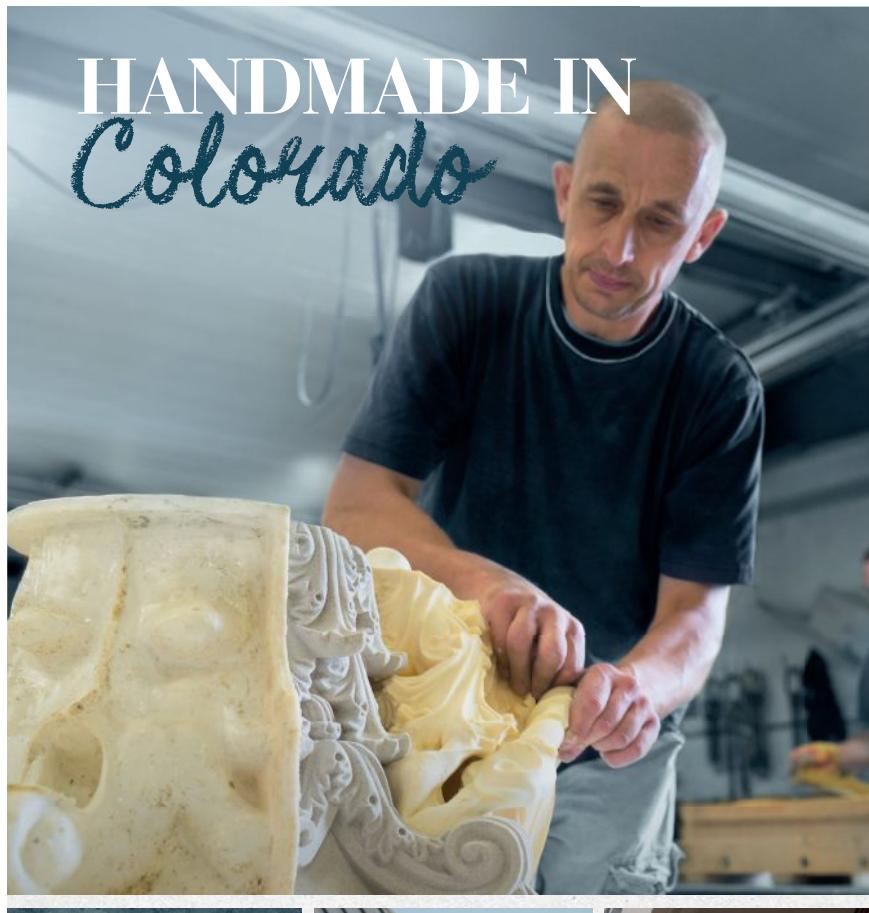
918-592-1700; Fax: 918-592-2385

www.wmcraft.com

Tulsa, OK 74107

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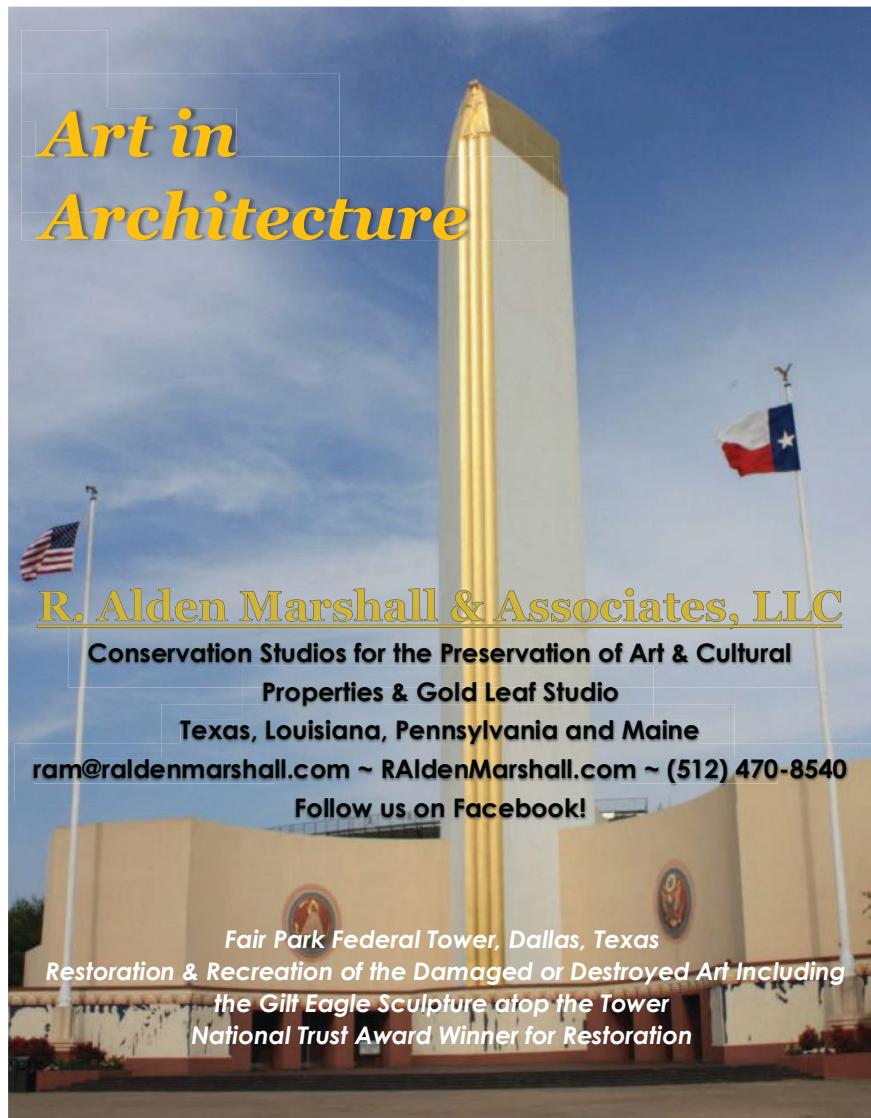


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Vintage Hardware and Lighting



2000 West Sims Way, Port Townsend, WA 98368
P: 360-379-9030 - www.vintagehardware.com -

Exterior Lighting



This lamppost is one of many styles available from **Authentic Designs**.



Ball & Ball Lighting manufactured these gas-lighting fixtures.

Authentic Designs

800-844-9416; Fax: 802-394-2422

www.authenticdesigns.com

West Rupert, VT 05776

Manufacturer of historical lighting fixtures & specialty metal products: chandeliers, lanterns, sconces & table lamps crafted in brass, copper, terne metal & Vermont maple; Early American & Colonial; CUL/UL listed for wet & damp locations; library binder \$30.

[Call for more information.](#)

Ball & Ball Lighting

610-363-7330; Fax: 610-363-7639

www.ballandball.com

Exton, PA 19341

Fabricator of historical lighting: chandeliers, sconces, pendants, lanterns & table lamps; Early American & Turn of the Century styles; antique & salvaged originals, new designs, custom work & reproductions; stair handrails; restoration services.

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This 26½-in.-tall lantern from **Deep Landing Workshop** has an antique-copper finish.

Deep Landing Workshop

877-778-4042; Fax: 410-778-4070

www.deeplandingworkshop.com

Chestertown, MD 21620

Manufacturer of custom lighting fixtures: chandeliers, sconces, pendants & lanterns; new designs, historic reproductions & custom work; handcrafted in wood, tin, brass or copper; glass, mica or alabaster shades.

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This New Orleans French Quarter-style gas lantern is one of many historical models available from **Bevolo Gas & Electric**.



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This lantern at Yale University's Silliman College was restored by **Grand Light**.

Grand Light

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www.grandlight.com

Seymour, CT 06483

Restorer of historic lighting fixtures & manufacturer of custom lighting fixtures: metal fabrication, glass fabrication, metal finishing, polishing, painting, welding, abrasive blasting; historical replication & reproduction.

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www.heritage-metalworks.com

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Herwig Lighting

800-643-9523; Fax: 479-968-6422

www.herwig.com

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Designer & manufacturer of handcrafted cast metalwork: period-design lanterns, street lighting, posts, custom outdoor lighting, street clocks, benches, bollards, custom plaques, signs & more; aluminum & bronze; since 1908.

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Historical Arts & Casting, Inc.

800-225-1414; Fax: 801-280-2493

www.historicalarts.com

West Jordan, UT 84081

Designer & custom fabricator of ornamental metalwork: doors, windows, hardware, stairs, balustrades, registers, fences, lighting, gutters, columns, weathervanes, snow guards, cupolas, planters, fireplace tools & more; iron, bronze, aluminum & steel; restoration services.

[Call for more information.](#)



Part of **Heritage Metalworks'** Scofield collection, this New England barn wall lantern with a bronzed copper finish and antiqued mirror was drawn from the Historic Deerfield museum in Massachusetts. Photo: Jody Doyle

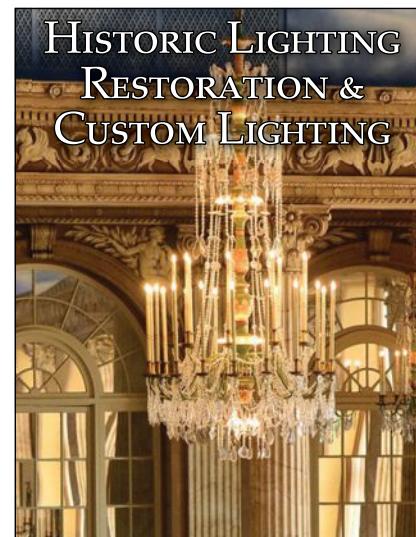
www.traditionalbuilding.com



**Historical
Arts &
Casting,
Inc.** custom
fabricated
this cast-
metal
gas-burning
lantern.



This Cape Cod flush ceiling light with clear seedey glass is available from **House of Antique Hardware**, it features solid brass construction, authentic aged patina and is CUL Listed for damp locations.



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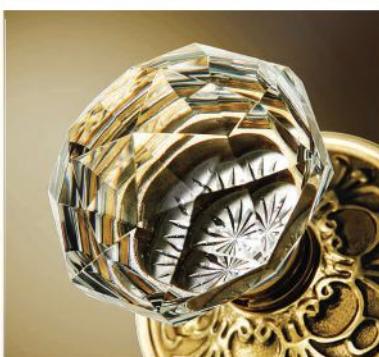
Portland, OR 97232

Manufacturer & supplier of vintage reproduction door, window, shutter, cabinet & furniture hardware & accessories: Federal, Victorian, Colonial Revival, Craftsman & Deco styles; lighting fixtures, push-button switches & plates; bathroom accessories; registers & grilles.

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Steven Handelman produces handcrafted exterior lanterns with a variety of finishes.

Steven Handelman Studios

805-962-5119; Fax: 805-966-9529

www.stevenhandelmanstudios.com

Santa Barbara, CA 93103

Manufacturer of hand-forged traditional lighting, grilles & fireplace accessories: many types & styles of lighting & grilles; fireplace screens, grates & inserts; historic reproduction & restoration services.

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Wiemann Metalcraft custom manufactured this lantern in bronze.

Wiemann Metalcraft

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Designer, fabricator, finisher & installer of fine quality custom ornamental metalwork: railings, fences, gates, custom, hot-rolled steel doors & windows, lighting, grilles, bronze & aluminum entry doors; all cast- & wrought-metal alloys, finishes & architectural styles; since 1940.

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www.periodlighting.com

Clarksburg, MA 01247

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Heather & Little is seen here craning a cupola into position on the Onondaga Court House in Syracuse, NY.

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Kreilick Conservation worked on the Independence Hall weather vane, Philadelphia, PA.

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Provider of laboratory & field analysis of materials, condition assessments, emergency response & stabilization, treatment, documentation & maintenance of metallic & masonry architectural elements, monuments, sculpture & objects; founded in 1996.

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Ludowici supplied the clay-tile roofing for this historic building.

Ludowici Roof Tile, Inc.

800-945-8453; Fax: 740-342-0025

www.ludowici.com

New Lexington, OH 43764

Manufacturer of architectural terra-cotta roof tile & floor tile: over 40 standard roof tile profiles including barrel, shingle, interlocking & shake & slate alternatives; customize shape, texture & color; historic renovation program; 75-year material warranty includes color.

MCA Clay Roof Tile

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www.mca-tile.com

Corona, CA 92879

Clay roofing tile manufactured in a variety of styles, including 1-piece 'S', Straight Barrel Mission, American Flat & Oriental; colors include natural, flashed & glazed finishes as well as custom colors.



NIKO duplicated the original copper design work to complete the restoration of the roof of the Carnegie Mansion in New York City.

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www.nikocontracting.com

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Custom fabricator & contractor of sheet metal & roofing: slate, tile & other roofing; storefronts, cornices, cupolas, domes, steeples, snow guards & leader heads; copper, lead-coated copper, zinc & stainless steel; metal ceilings.

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800-553-0523; Fax: 610-891-0834

www.preservationproducts.com

Media, PA 19063

Manufacturer & distributor of Acrymax restoration & preservation systems for historic metal roofs: durable weatherproof membrane can be used as complete roof system or for repair; Acrymax is an energy star partner.

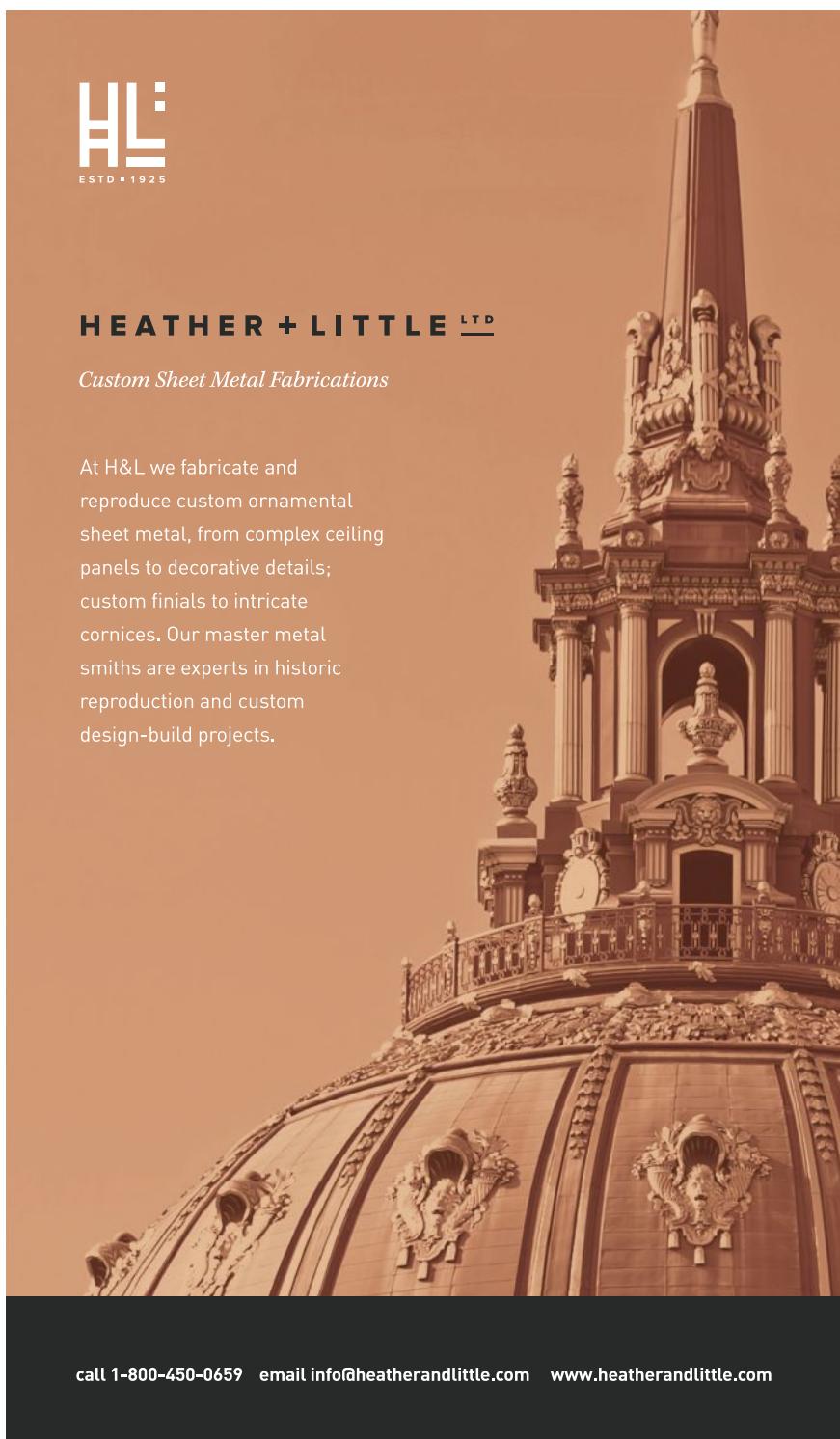
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W.F. Norman Corp.

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www.wfnormalize.com

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Manufacturer of sheet-metal ornament: hundreds of stock designs; cornices, moldings, brackets, pressed-metal ceilings, roofing, siding, finials & more; zinc, copper & lead-coated copper; duplication from samples or drawings.

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aviancontrol.com

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www.birdbarrier.com

Carson, CA 90746

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Bird-B-Gone's Jolt FlatTrack low-profile track system does not harm birds; it emits a mild shock as birds land on its surface.

Bird-B-Gone

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www.birdbgone.com

Irvine, CA 92618

Manufacturer of humane, effective bird control products: professional-grade bird spikes, bird netting, electric bird track, visual, chemical & audible systems; stainless steel & polycarbonate spikes; Bird Net 2000, Bird Jolt Flat Track & Bird Shock Track; extensive base of authorized installers who are available for consultation & installation.

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Avian Flyaway's bird-control system was installed on California State Capitol in Sacramento, CA.

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972-771-6679; Fax: 972-722-0165

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Rockwall, TX 75087

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www.bird-x.com

Chicago, IL 60612

Manufacturer of bird & pest control products: SPIKES Needle Strips, sticky gels, nets, ultrasonic & visual devices; for landmark status, museums, industrial, commercial & residential properties.



Bird Barrier America's barely visible StealthNet, keeps birds from perching on the acanthus leaves of these Corinthian capitals.

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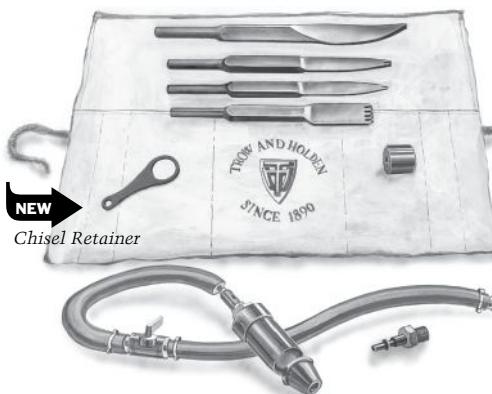
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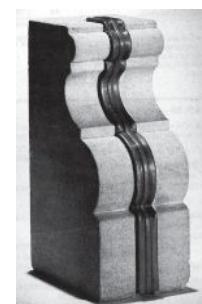
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Dendrochronology: William Flynt Brings Science to New England's Historic Buildings

By Judy L. Hayward

It was 2001 and Bill Flynt was on the case to determine the true age of the Sheldon house, one of the buildings in Historic Deerfield's collection. There was a date marker of 1743, or possibly even earlier; a new ell had been added in 1802; he had bills of sale for glass and lime dating from the 1750s, and the structure had been restored in 1957. The front of the building had seemingly been built against an earlier building, long gone. A conclusive date eluded Flynt.

The quest to present accurate information about historic building construction led Historic Deerfield's architectural conservator, Bill Flynt, to consider dendrochronology to help him resolve the disparities between the physical and documentary evidence.

He had heard that colleagues at the Society for the Preservation of New England Antiquities, now Historic New England (HNE), were conducting a pilot project working with oak to see if dendrochronology could be used to assist in dating buildings in eastern Massachusetts. HNE put him in touch with Columbia University's Lamont-Doherty Tree Ring Laboratory in Palisades, NY. (<http://www.ldeo.columbia.edu/tree-ring-laboratory/about-us>).

Coincidentally, LDEO (Lamont-Doherty Earth Observatory, Columbia University's laboratory in Palisades, NY) scientist Paul Krusic was going to be visiting Deerfield to see his sister, a teacher at Deerfield Academy, shortly after Bill made his initial contact. Krusic made the trip, reviewed the situation, and proposed a pilot project to see if pitch pine, the species of interest, could be used to date Deerfield's historic structures. Several houses were selected for study, core samples were extracted, analyzed, and the results compared to a master chronology of tree rings for the same species from the New Paltz area in New York.

Paul found certain Deerfield samples aligned convincingly with the master, thus allowing the creation of the first dated master for pitch pine in New England. From this initial study, and ensuing work by Bill, the timbers from the main frame of the Sheldon house were determined to have been felled in the winter of 1753/4. Paul offered to train Bill and help him establish a laboratory at Historic Deerfield.

Bill Flynt had found his answer and a new passion. Since then, he has conducted dendrochronology studies on close to 250 structures throughout New England and New York State. His work has broken new ground on our understanding of building craft practice in the northeast.

Dendrochronology is the science of studying tree ring growth. Bill's focus on historic construction studies is more aptly described as dendroarchaeology. Most of the research at university tree-ring laboratories today centers on understanding forest dynamics, forest fire history, climate change, and the impact of historical events on the growth and health of trees and people. Nevertheless, it is used to study diverse subjects such as excavated archaeological timbers from structures and ships, works of art painted on or sculpted of wood, and the species of trees that make up historic wooden architecture around the world. The knowledge that can be revealed includes dates that trees were felled, the trade networks of wood from harvest to use,



ABOVE: Bill Flynt takes a core sample from an 18th-century chimney girt. Photo: Ed Hood

LEFT: A comparison of oak (lower) and pitch pine (upper two) core samples. Photo: William Flynt, Historic Deerfield

and information of value to architectural historians.

Understanding the climate's impact on trees can tell us what was happening to settlements at any given time. Bill mentioned the Jamestown Colony (1607) as an example. Analysis of Virginia trees by Dave Stahle and his colleagues at the University of Arkansas tree-ring laboratory revealed that there was an extreme drought during the early years of the settlement that was a significant factor in the colony's demise.

Wood samples are taken from numerous locations within any given building, and the growth rings of the samples are microscopically measured and compared to master chronologies of respective species both from nearby sites and the region. The period of study where dendrochronology can be most helpful in understanding buildings in the United States ranges from the 17th to the mid-19th century. The primary tree species used in construction for which there are dated masters in the New England and eastern New York region include oak, pitch pine, hemlock, spruce, and to a somewhat lesser extent, white pine and chestnut.

One revealing project involved sampling a group of buildings on Martha's Vineyard that were actually built in the second quarter of the 18th century, not the 17th century as previously thought. He surmised that the builders just continued to build as they had been taught without feeling compelled to move from First Period (1620-1730) practices into the early Georgian styles of the 1740s.

By sampling different areas of a building, his work has documented that occasionally upper stories of houses remained unfinished for several generations. This has led historians to concur that sometimes it took longer to finish homes than previously thought. He recently evaluated a reportedly early house in East Hartford, CT, that had been moved several times; the timbers were felled during the winter of 1697/8, proving the evidence aligned with the stories surrounding the house. More often than not, structures with purported 17th-century dates turn out to be 18th century when the dendrochronology study is complete.

Architectural historians sift through physical, documentary and anecdotal evidence to unravel the mysteries of extant buildings like detectives following a forensic trail. The use of scientific methods like dendrochronology reinforces the findings with verifiable data. Flynt is entering his 40th year at Historic Deerfield and is widely respected for his expertise in historic buildings. He can be reached at wflynt@historic-deerfield.org for those looking to hire him for an analysis of the microscopic ancestry of historic timbers and wooden architectural elements. Check out www.historic-deerfield.org to plan a visit to the museum.

Reviewed by Emily O'Brien

What Makes a City Tick?

Cities Alive: Jane Jacobs, Christopher Alexander, and the Roots of the New Urban Renaissance

By Michael W. Mehaffy

Sustasis Press, Sustasis Foundation, Portland, OR

Paperback; various color photos & illustrations;

290 pages; \$19.95

ISBN: 978-0-9893469-9-3

Cities are undergoing a renaissance; what was once an American lean toward suburban sprawl, the U.S. is now experiencing a rebirth of many of its cities. Michael Mehaffy's new book, *Cities Alive*, explores why this rejuvenation is happening—"because we've begun to understand how they really work—and what they will need to work better in the years ahead."

The premise of the book discusses two main heavyweights who have helped shape this resurgence—American-Canadian urbanist Jane Jacobs and the English-American architect Christopher Alexander, both whose significant insights have formed multiple generations of professionals, scholars and activists alike. Mehaffy takes us on a journey of where Jacobs' and Alexander's lines of thought run parallel and intersect.

When cities are spoken of throughout the book, Mehaffy is not only referring to the vast compressed cores of major metropolises but also to smaller cities and towns. He tackles tough topics like "Why cities are the problem, but cities are the answer too," systems reform, diverse opportunities, connectivity, environmental sustainability, pattern languages, threats and more. Points are often illuminated by references to Jacobs' and Alexander's published pieces and sometimes illustrated by photos, charts or diagrams to further drive home key elements.

The book is divided into five main sections, the first two covering Jane Jacobs and Christopher Alexander, respectively. Sections three and four delve in to philosophical roots, mereology and the structuralist renaissance, as well as opportunities and threats, including the New Urban Agenda, "artistic sprawl" and more. The book closes with the fifth section discussing fundamental lessons and optimistic examples.

Overall, *Cities Alive* features a comprehensive view of city structure, what works and what doesn't, and most importantly, how we can make it better. At the back of the book, you'll find references and suggestions for further reading, plus a detailed index. What's most remarkable is that in the latter half, Mehaffy pulls from his curated pot of somewhat rather abstract ideas, garnered from Jacobs and Alexander, and transforms them into solutions that can be implemented in very tangible, realistic ways.

The problems are not just with the city structures but also of issues on a much deeper level. Mehaffy states, "In all of our current challenges, cities—again, in the broad sense of urban settlements—loom very large. It is within

the structures of these urban settlements that we consume, interact, create, and ultimately generate the impacts that now prompt such growing concern. But it is also within them that we develop as human beings and as a species—that we create, innovate, adapt and problem-solve. It is in these settlements that we create a civic framework by which we may work together on shared opportunities and challenges."

He also adamantly argues the reawakening is still in its adolescence form with more work needing to be "done to achieve its promise—especially in an age of rapid, often sprawling urbanization."

He warns, "I will argue that this renaissance is, in fact, a transformation in the way we think of beauty, of quality, and of life. It is a determined mastery of the technological abstractions that are, on the one hand, our powerful agents,

but if we are not careful—and we have not been nearly careful enough—our destructive masters."

An alluring and thought-provoking read for students, government officials, architecture professionals and more, *Cities Alive* will have you nodding your head as you read along, offering an intricate and intelligible understanding of city structure as it examines essential philosophical ideas about cities and what they offer their inhabitants. Hint: It's so much more than you can rattle off the top of your head.

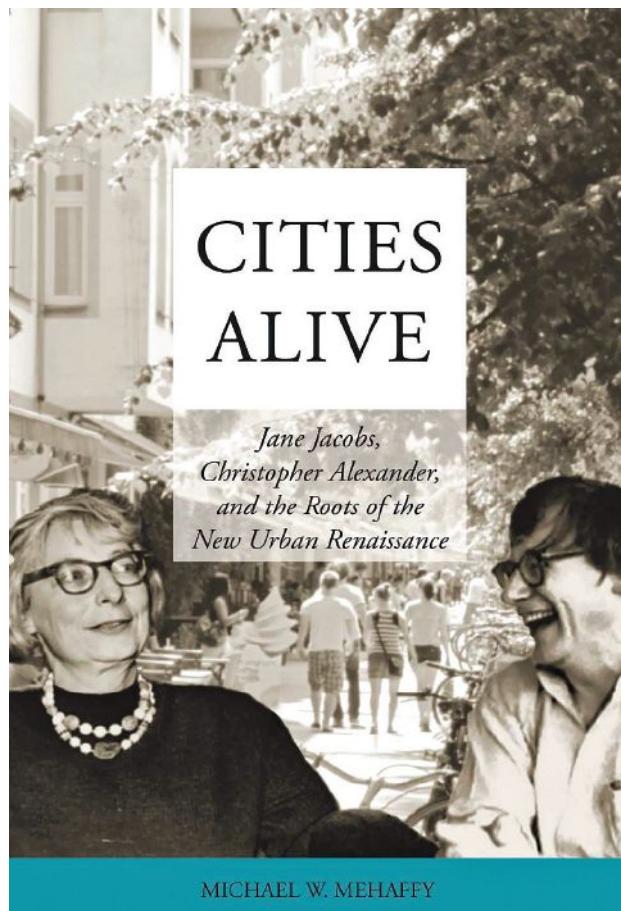
An urbanist and design theorist, author Michael W. Mehaffy, Ph.D., is the executive director of Portland, Oregon-based Sustasis Foundation, editor of Sustasis Press and currently has appointments in teaching and/or research in seven graduate universities in six countries and three disciplines (architecture, urban planning and philosophy).

A distinguished scholar on both Jane Jacobs and Christopher Alexander, Mehaffy has also acted as a consultant to UN-Habitat on the development of the outcome document of Habitat III, the New Urban Agenda, a historic United Nations agreement emphasizing the pivotal role of cities and towns in meeting the challenges of the future, which

has been adopted by consensus by all 193 member states of the United Nations. As discussed in the book, Jacobs and Alexander were monumental in formulating conceptual insights behind the New Urban Agenda and whose teachings continue to offer guidance as we forge ahead.

Mehaffy says, "Both authors leave us today free to test their ideas, to falsify, modify, combine with others—and then, if we find them useful, proceed to apply the ideas constructively, or alternatively, revise them as needed. Both authors have frequently urged us to follow an evidence-based approach, and continue the journey of learning and growth." He points out that their teachings have "offered us a useful roadmap" and now it's up to us to decide which way to go.

Emily O'Brien is a freelance writer living in Sydney, Australia, and also the production editor for Traditional Building and Period Homes magazines.



Stop Skyscrapers in Paris

By Mary Campbell Gallagher

The world loves Paris because it is beautiful. Since the 17th century, first royal decrees and then statutes have governed its appearance. Paris has had height limits for hundreds of years, and they help maintain the city's unique low skyline. But today political pressure is gutting the law. The beauty of Paris is under threat. Residents feel powerless. And the world does not know.

The zoning law of Paris, the Plan Local d'Urbanisme (PLU), aims "to preserve the urban forms and the patrimony coming from the history of Paris, all the while permitting contemporary architectural expression." It specifies building heights and materials for facades, among much else. Permission may be refused if a building may "undermine the character" of its surroundings.

However, Paris City Hall, developers and star architects say that Paris needs skyscrapers to be *modern*, by which they seem to mean, more like Dubai. They accuse opponents of promoting a museum-city, a *ville-musée*. But opponents of skyscrapers, including French preservationist association SOS Paris and, more recently, the International Coalition for the Preservation of Paris, ICPP, which I founded, strongly disagree.

It is not too late to stop the skyscrapers. To be sure, one skyscraper project, Renzo Piano's courthouse, is complete, and ground has been broken for another, the so-called Duo. But dozens more are planned. To save Paris, we cannot rest.

Paris has not learned from its experience with skyscrapers. Height limits in Paris were relaxed in the 1960s and 70s, when modernists ran the planning department. One result was the universally-hated 210 meters (689-ft.) Tour Montparnasse, which disfigured the city in 1973. Parisians protested, and in 1977, the government re-introduced height regulations: 31 meters (102 ft.) in the center, 37 meters (121 ft.) on the periphery.

In 2008, ignoring the lesson of the Tour Montparnasse, and explicitly disregarding polls showing Parisians opposing skyscrapers, the City Council raised the height limits and approved construction of six skyscraper projects at the city's gates. The then-mayor said elected officials must not be guided by polls, but by the general interest. He cited young families needing apartments, and he invoked the competition among world cities.

Today's feverish, high-pressure, campaign for skyscrapers, however, looks more like power politics than like thoughtful policy. The media promote the campaign. The City of Paris gives architects exhibits in its 15 public museums, with attendant laudatory reviews, interviews, and conferences.

But excellent, indeed, conclusive, counter-arguments exist. Among them, that while France prides itself on aesthetic excellence, these skyscrapers are ugly. Following the French government's order to vacate their recently-renovated historic buildings on the Ile de la Cité, the courts will move into the first of the new skyscrapers, Renzo Piano's courthouse, in April. This banal 40-story-tall pile of glass boxes is a sock in the eye for all Parisians. Visible everywhere, it powerfully suggests the damage the entire range of the proposed skyscrapers will do when they encircle Paris.

Further, Paris does not need skyscrapers. Paris has a glut of empty office space and a shortage of housing, but the new buildings are chiefly for offices, and none is for housing. Today, according to 2017 statistics from A.T. Kearney, Paris is an alpha city of world commerce, with New York and London, so

skyscrapers won't boost its ranking. Experts say these skyscrapers can't meet recommended local sustainability standards. And there is more.

In their feverish haste to build skyscrapers, the City of Paris and the national government have signed wasteful contracts. The courthouse contract, a public-private partnership between the national government and the developer Bouygues, requires the French government to pay rent of nearly three billion euros over 27 years, at a time when the Ministry of Justice is painfully short-funded. The lawyers opposing the move from the center of Paris showed the then-Minister of Justice, Christiane Taubira, that the contract was wasteful, and she, in turn, went to the Prime Minister, but the government insisted, regardless.

Most in contention today is the proposed 42-story, 180 meters (591 ft.) Tour Triangle of Herzog & de Meuron, a project of the developer Viparis. This ugly wedge of glass and steel has incited close re-votes in the City Council. From points on the Right Bank, it is smack in the line of sight of the 324

meters (1,063 ft.) Eiffel Tower. Arguing that this purportedly private development is actually a public project of Paris City Hall, and alleging favoritism in the award, disregard of legal procedures, and waste, SOS Paris has taken the matter to court, lodging civil and criminal complaints, still pending.

The courts, however, can also gut the PLU.

In 2001, the politically-powerful French conglomerate LVMH, the world's largest luxury-goods company, bought the Samaritaine department store in the historic center of Paris. LVMH engaged the Japanese Pritzker-winning architecture firm SANAA. The art nouveau Samaritaine facade on the Seine is a nationally protected monument. The structures behind that building on the historic Rue de Rivoli, dating from the 17th through the 19th centuries, were protected only by the PLU. There, SANAA proposed a block-long undulating glass facade, opaque, seven stories tall, without doors or windows.

Challenging the demolition and building permits, arguing that the design violated the PLU, SOS Paris won in the Administrative Tribunal and then again on appeal. Political pressure was intense. The old buildings were demolished. The City and LVMH appealed to the highest administrative court in France, the Council of State (Conseil d'Etat). In 2015, it held

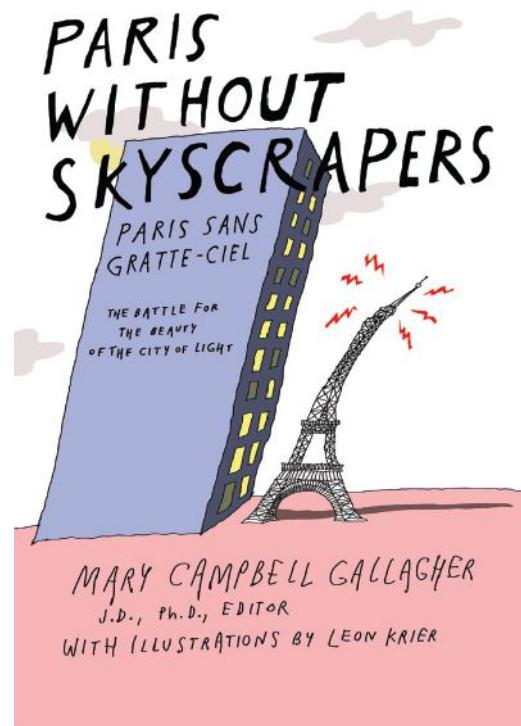
for LVMH and City Hall. The deciding factor? The design was "contemporary." That reasoning is contrary to the plain language of the PLU, but the judgment is final.

One must wonder what happened.

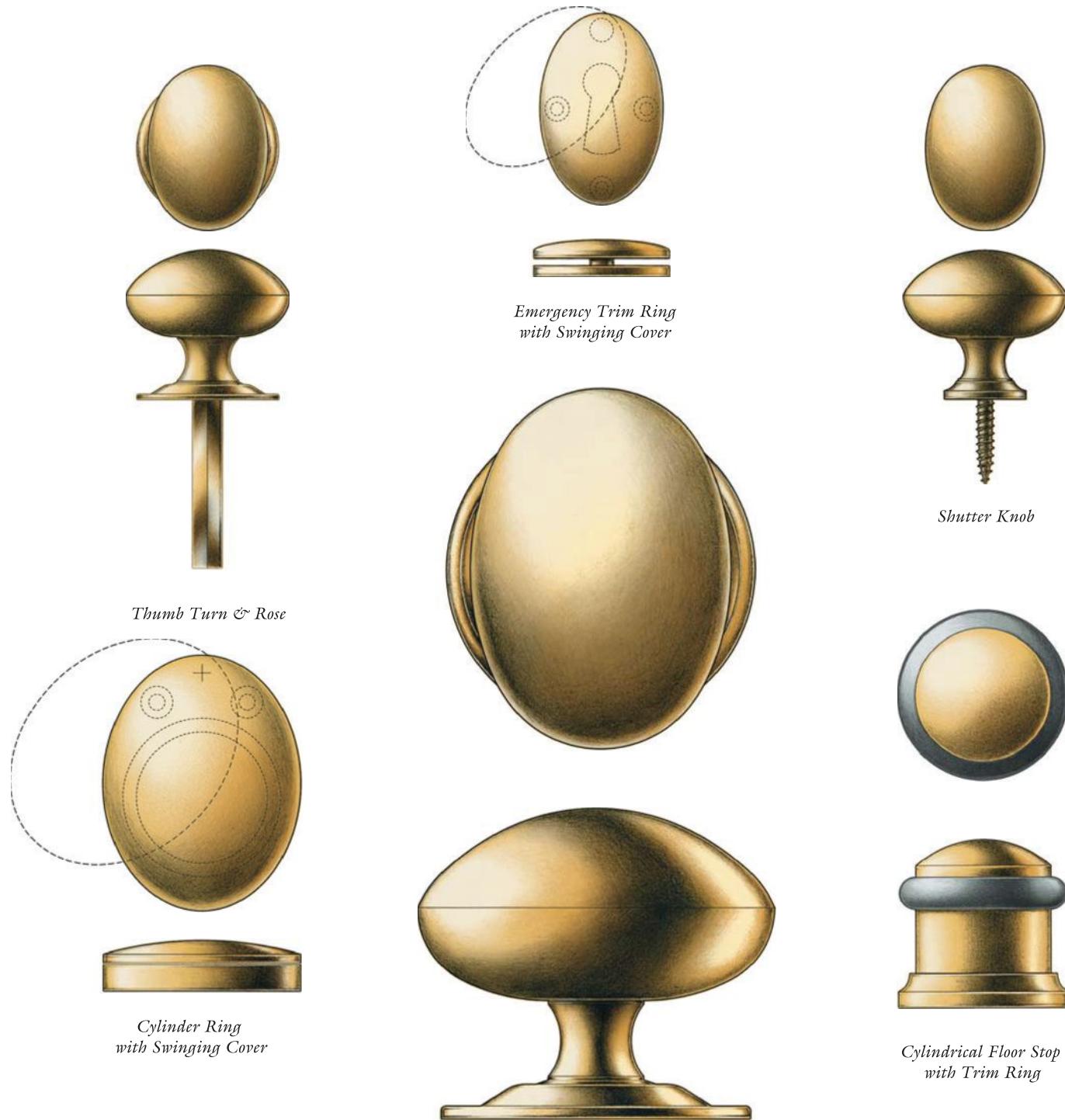
Paris is the world's city. If the world knows what is going on, together we can stop the skyscrapers. That is the aim of the reports, book, and conferences that ICPP sponsors and of the lawsuits that SOS Paris brings. All for the sake of beautiful Paris. Please support us. Go to SaveParis.org for information.

See www.traditionalbuilding.com for related images.

Mary Campbell Gallagher, J.D., Ph.D., is the founder and president of the International Coalition for the Preservation of Paris, ICPP. She is U.S. liaison for SOS Paris. She is editor of the forthcoming book of essays, Paris Without Skyscrapers: The Battle to Save the Beauty of the City of Light, coming from ICPP, in cooperation with SOS Paris. Gallagher is also president of New York-based legal training company BarWrite and BarWrite Press. She can be reached at mcg@marycampbellgallagher.com.



The book, *Paris Without Skyscrapers: The Battle to Save the Beauty of the City of Light*, will be available this fall.



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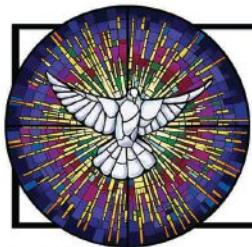
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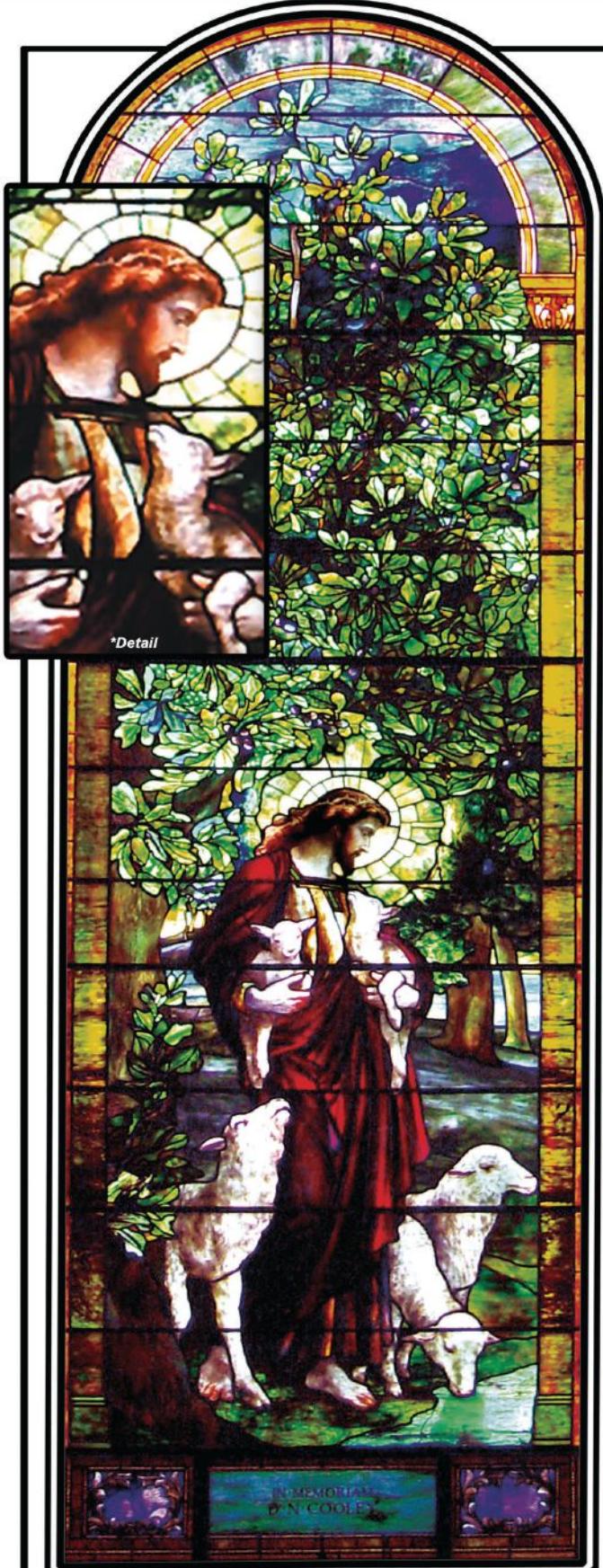
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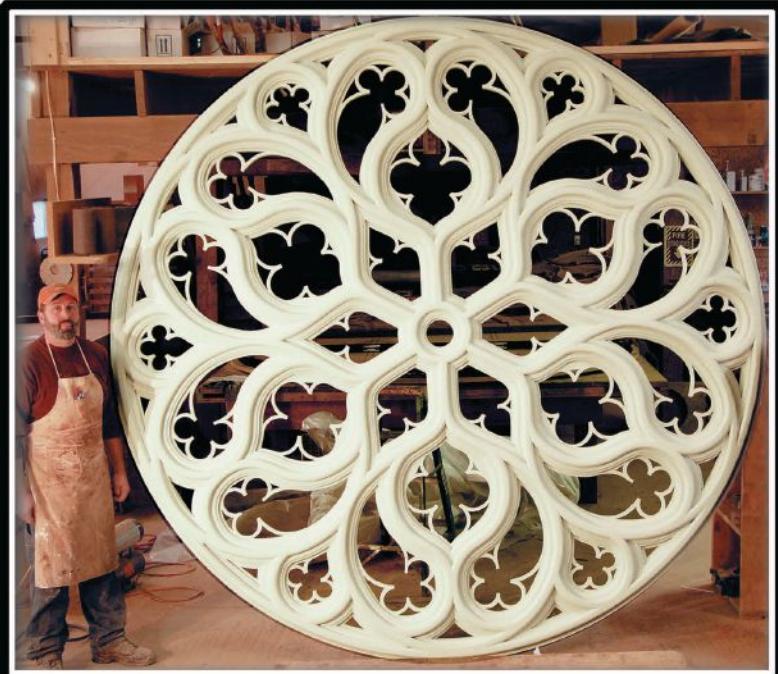
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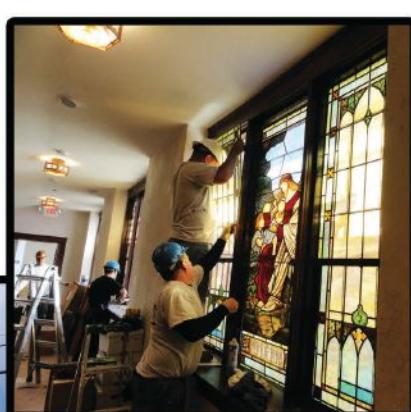


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